DEPARTMENT OF HOME SCIENCE
S.V.U. COLLEGE OF SCIENCES
SRI VENKATESWARA UNIVERSITY: TIRUPATI

RESTRUCTURED CURRICULUM FOR
M.Sc. HOME SCIENCE – FOOD SCIENCE NUTRITION AND DIETETICS
(REGULAR) PROGRAMME
TO BE IMPLEMENTED WITH EFFECT FROM THE ACADEMIC YEAR 2021-2022

SYLLABUS
Choice Based Credit System (CBCS)

Amended as per NEP 2020

Department Vision

To be a premiere centre for excellence in higher education in the areas of specialization fostering nurturing and building careers for students and to be an apex body playing a pivotal role in planning and monitoring community development.

Department Mission

The Department of Home Science is committed to empower the students in capacity building skills through teaching, research and community-oriented extension activities, thereby widening the scope for self-development and Employability and preparing them as socially useful and responsible citizens.

The academic programmes, research and extension activities are planned and executed meticulously so as to reflect the vision and mission of the Department, focusing on the empowerment of students through quality education by updating syllabus with current trends and providing appropriate knowledge and skills compete at the global level. The Department through motivated staff always strives towards reaching proficiency through teaching and community-oriented extension programmes.

Department Objectives

1. Enable the students to understand the interrelation of Food and Health,
2. To foster knowledge across the life span in inter connected Human Development factors to become efficient counselors and early childhood educators
3. Develop sensitivity towards the community problems and train the students in Extension and outreach activities.
4. To focus on training students in application of techniques to process and preserve the food.

The department of Home Science has been adopting the systematic procedure for development, revision and implementation of the curriculum for four different post-graduate programmes offered viz., **Food Science Nutrition and Dietetics (FSND), Human Development and Child Welfare (HDCW), Extension Management and Communication Technology (EMCT) and Food Technology (FT)**. The learning out comes of each course

are framed such that they help students to gain theoretical knowledge as well as skills to meet local, national and global trends. The curriculum of each course has practical, field visits, visit to institutions and a mandatory internship programme, which focus on imparting essential skills and hands-on experience and experiential learning thereby can excel when they get employment in Government and Non-Government Organizations to work individually as well as in teams. The cross-cutting issues namely, technology, gender, child rights, human values and professional ethics are incorporated in core theories and electives to enable the students to lead a purposeful and independent life filled with moral and ethical values. Majority of the courses offered across all programmes do focus on nurturing employability/entrepreneurship/skill development. The outcomes of each programme have the emphasis on commitment and contribution to the interest of the society as a whole and perform well in their careers.

Programme Objectives

To enable the students:

1. To provide human resource in the field of Food Science, Nutrition and dietetics to cater the needs of the Community at local, regional and National levels.
2. To give skill and hands on experience in the thrust areas of the programme and prepare students for research.
3. To give training both in theory and practical for higher studies and competitive exams.
4. To facilitate by giving quality education for employability, entrepreneurship and skill development.
5. To inculcate the corporate social responsibility by profession and personal development there by developing the community by various curriculum and cocurricular activities.
6. To conduct field studies, Internship and project work as part of curriculum for developing data base for interventions and further studies and help policy makers to improve the health status of the population in the community.

Programme Educational Objectives (PEO)

To enable students to:

1. Understand the relationships between Food Science, Nutrition and Metabolism.

2. Gain knowledge on fundamental science involved in Food science, food processing and preservation, food quality, developing diet plans for different age groups and disease conditions.
3. Acquire skills in applying knowledge of Food science, Nutrition, and therapeutic nutrition in community and human health.
4. Interpret nutritional research through informed knowledge of food science, nutrition and diet therapy in community and health.

Program Outcomes

After successful completion of the program, the student is able to:

S. No	Program Outcomes
PO1	Apply knowledge in Food science nutrition and dietetics to understand the chemical components- nutrients and non-nutrient constituents their physico chemical and functional properties, spoilage, processing, preservation, packaging of different foods. To assess nutritional status of individuals in various life-cycle stages and determine nutrition-related problems and diseases by applying knowledge of metabolism and nutrient functions, food sources, and physiologic systems in community, hospital, and in any situations.
PO2	Identify and understand different problems related to food science, food microbiology, food adulteration and nutritional problems in different stages of life in health and disease- its consequences and dietary management and apply knowledge to tackle these problems.
PO3	Design food products applying the principles of food science and nutrition to meet the challenges of nutritional problems.
PO4	Conduct research in different fields of nutrition using human and animal models, designing new food products, food service establishments.
PO5	Apply appropriate techniques to design, process, preserve, analyze and authenticate the different components of foods and food products.
PO6	Function effectively in different facets as dietitian, quality control systems, food analysts, research and development, food product designing, different food service establishments, and policymaking
PO7	Communicate effectively Nutrition information in person and with community. Acquire skills in writing research report, documentation, case studies, seminar

	presentations, group discussions, and marketing strategies.
PO8	Describe social and environmental dimensions within nutrition and the life sciences. Able to demonstrate the National and International food laws, regulations and safety standards in application of food additives to ensure safe food.
PO9	Know Professional and social ethics as researcher, dietitian, community mentor, food business operator.
PO10	Apply knowledge of Nutrition and food science for sustainable development of the society in terms of socio cultural aspects, attitudes, and practice balanced diet in health and disease, food quality and safety regulations, food adulteration, food safety and hygiene.
PO11	Develop and design their own food business plan in terms of food business operators and food service establishments.
PO12	Learn new concepts of Nutrition science in global perspective and prepare themselves for lifelong learning process.

SRI VENKATESWARA UNIVERSITYCOLLEGE OF SCIENCES: TIRUPATI
DEPARTMENT OF HOME SCIENCE
CHOICE BASED CREDIT SYSTEM (C.B.C.S), SYLLABUS AND SCHEME OF EXAMINATION
(WITH EFFECT FROM THE ACADEMIC YEAR 2021)

M.Sc., FOOD SCIENCE NUTRITION AND DIETETICS (FSND)

I Semester

S.No	Components of the Study	Title of the course	Title of the paper	Credit Hrs/ Week	No. of credit	IA Marks	Sem End Exam Marks	Total
1	Core	FSND 101	Food Chemistry and Analysis	6	4	20	80	100
2	Core	FSND 102	Clinical Nutrition and Dietetics-I	6	4	20	80	100
3	Compulsory Foundation	FSND 103 -A	Food Science and Experimental Foods	6	4	20	80	100
		FSND 103- B	Baking Technology	6	4	20	80	100
4	Elective Foundation	FSND 104 -A	Community Nutrition	6	4	20	80	100
		FSND 104 -B	Nutrition during Life span	6	4	20	80	100
5	Practical -I	FSND 105	101+103-A/103-B	3+3/3	4	--	--	100
6	Practical - II	FSND 106	102+104-A/104-B	3+3/3	4	--	--	100
	Total				24			600
7	FSND 107: Human Values and Professional Ethics-I (Audit course)*			0	0	100	0	0

***Audit Course- Zero Credit under Self Study**

II Semester

S.No	Components of the Study	Title of the course	Title of the paper	Credit Hrs/ Week	No. of credit	IA Marks	Sem End Exam Marks	Total
1	Core	FSND 201	Nutritional Bio chemistry	6	4	20	80	100
2	Core	FSND 202	Clinical Nutrition and Dietetics-II	6	4	20	80	100
3	Compulsory Foundation	FSND 203- A	Food Microbiology and Safety	6	4	20	80	100
		FSND 203 B	Nutrition in Emergencies And Disaster Management	6	4	20	80	100
4	Elective Foundation	FSND 204 A	Research Methodology	6	4	20	80	100
		FSND 204 B	Statistics and Computer Applications	6	4	20	80	100
5	Practical –I	FSND 205	201+203-A/203-B	3+3/3	4	--	--	100
6	Practical – II	FSND 206	202+204-A/204-B	3+3/3	4	--	--	100
	Total			-	24			600
7	FSND 207: Human Values and Professional Ethics-II (Audit course)*			0	0	100	0	0

***Audit Course- Zero Credits under Self Study**

III Semester

S.No	Components of the Study	Title of the course	Title of the paper	Credit Hrs/ Week	No. of credit	IA Marks	Sem End Exam Marks	Total
1	Core	FSND 301	Food Processing and Preservation Technology	6	4	20	80	100
2	Core	FSND 302	Advances in Human Nutrition	6	4	20	80	100
3	*Generic Elective	FSND303-A	Nutrition Assessment Techniques	6	4	20	80	100
		FSND303-B	Public Health Nutrition					
4	Practical	FSND 304	301+302	6	4	--	--	100
5	**Skill Oriented Course	FSND 305	Institutional Food Service Management(T)+Practicals (P)	3+6	4	10	90 (40+50)	100
6	***Open Elective	FSND306-A	Fundamentals of Food, Nutrition and Health	6	4	20	80	100
		FSND 306-B	Dynamics in Food Preparation					
	Total				24			600

***Generic Elective – Student has to choose any one paper**

****Internship is mandatory**

*****Open Elective – Offered by Department to other Department students**

Note: Interested student may register for MOOCS with the approval of DDC

IV Semester

S.No	Components of the Study	Title of the course	Title of the paper	Credit Hrs/ Week	No. of credit	IA Marks	Sem End Exam Marks	Total
1	Core	FSND 401	Food Safety Standards and Quality Control	6	4	20	80	100
2	Core	FSND 402	Food Product Development and Marketing	6	4	20	80	100
3	*Generic Elective	FSND 403-A	Nutrition for Health and Fitness	6	4	20	80	100
		FSND 403-B	Geriatric Nutrition					
4	Practicals	FSND 404	401+402	6	4	--	--	100
5	Multi Disciplinary Course	FSND 405	Technology of Packaging(T+P)	3+6	4	20	80	100
6	**Open Elective	FSND 406-A	Child Growth and Development	4	4	20	80	100
		FSND 406-B	Disaster Management					
	Total				24			600

***Generic Elective- Students has to Choose One**

****Open elective –Offered by Department to other department Students.**

NOTE: Interested Students may Register for MOOCS with the approval of DDC.

FSND 101: FOOD CHEMISTRY AND ANALYSIS

(Common to M.Sc. Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives -To enable the students to:

1. Acquire knowledge on chemical composition of different foods.
2. Understand the physical, chemical, and functional properties of foods.
3. Know the principles and working applications of different analytical techniques associated with food.
4. Perform skills in qualitative and quantitative estimation of nutrients in different foods.

CORE –THEORY

UNIT-I: Water Chemistry and Dispersed Systems

- Water chemistry – Structure of Water, Free, Bound and Entrapped Water.
- Water Activity and Relative Vapour pressure– Definition and measurement, factors affecting water activity, Moisture sorption isotherms, Hysteresis and Moisture Determination.
- Dispersions- Food as dispersed systems, Liquid dispersions.
- Colloids- Definition, Characteristics of Colloids, Gels, Emulsions, Foams.

UNIT-II: Carbohydrates and Lipids

- Carbohydrates – Classification , Structure, Physico – Chemical properties of
- Monosaccharide's-Pentoses, and Hexoses,
- Oligosaccharides – Di Saccharides-Maltose, Lactose, Sucrose – Crystallisation of sugars, Polysaccharides – Starch-Amylose and Amylopectin- Gelatinisation of starches and Hydrolysis of starch, Cellulose and Pectin- Structure and properties.
- Lipids – Nomenclature, classification – Milk fats, Animal fats, Vegetable fats.
- Physical properties – Crystallization, Plasticity
- Chemical properties – Thermal decomposition, Chemistry of Frying, Hydrogenation, Inter esterification, Rancidity of fats.

UNIT-III: Proteins and Amino Acids

- Proteins and amino acids – Classification, Structure, Physical properties.
- Functional properties –
    - Protein Denaturation
    - Protein hydration, Solubility,
    - Interfacial properties,
    - Emulsification and foaming, Gelation,
    - Dough formation.

UNIT-IV: Food Analysis

- Introduction to food analysis- Methods of sampling, Determination of Total ash, Principles and methods of chemical analysis

- Carbohydrates – Qualitative and Quantitative analysis of starch and sugars.
- Proteins – Electrophoresis, Micro-Kjeldahl method.
- Fats – Analysis of solid and liquid fats, Rancidity.
- Determination of Vitamin and Minerals – Vitamin-C, Iron, Phosphorus, Calcium.
- Basic principles and applications of spectroscopy- UV, UV- visible, AAS, AES.
- Chromatography- principles and applications of Chromatography- HPLC, GC/ MS and LC/ MS.

REFERENCES

1. Lillian Hoagland Meyer. (2019).Food Chemistry", First Edition, CBS publishers and Distributors, New Delhi.
2. Fennema R. (2019). Food Chemistry. Marcel Dekker Inc. New York.
3. Ranganna S. (2019). Handbook of analysis and quality control for fruits and vegetables, 2nd edition. Tata McGraw Hill.
4. Nielsen S.S. (2002). Introduction to the chemical analysis of foods, CBS Publishers and Distributers, Pvt. Ltd.

Course Outcomes -After completion of this course, students will be able to:

CO1 Acquire knowledge on the physico chemical properties of compounds in foods.

CO2 Apply the functional properties of foods in processing and preservation.

CO3 Perform skills in qualitative and quantitative estimation of nutrients in different foods.

CO4 Describe the chemical components and their functions in Food applications.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3			2	2							3	
CO2	3	3			2	3							3	
CO3	3				3	3		1				1		3
CO4	3				2	2		1				1		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
First Semester
(CBCS for the students admitted from 2021-22 onwards)
Paper-I: FSND - 101: FOOD CHEMISTRY AND ANALYSIS
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Differentiate free, bound and entrapped water.
2. What are emulsions? Explain.
3. What is Pectin and write the properties.
4. Write the principle and application of Electrophoresis.
5. Explain the Chemistry of frying in foods.
6. Explain the hydrogenation of fats.
7. What are Amylose & Amylopectin and draw the structure.
8. Write any two identification tests of amino acids.

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks: 4x15=60

9. (a). Describe the determination of moisture in foods.

(or)

(b).Write the characteristics of colloids.

10. (a).Discuss the physical & chemical properties of lipids.

(or)

(b). Give the classification and discuss the physico- chemical properties of carbohydrates

11. (a).Explain the chemistry of hydration and dough formation of proteins.

(or)

(b). Classify proteins with suitable examples and write about protein denaturation.

12. (a).Explain the principle and estimation of protein by microkjeldahl method.

(or)

(b). Write the principle and applications of GC/ MS.

FSND 102: CLINICAL NUTRITION AND DIETETICS-I

Course Objectives -To enable the students to:

1. Understand the concepts of nutrition, its relation to health.
2. Describe the role and responsibilities of Dietitian in Hospital.
3. Apply Knowledge related to Therapeutic modification of diets and diet planning.
4. Plan and prepare diet for different diseases conditions.

CORE THEORY

UNIT- I: Diet Counseling and Therapeutic Diets

Dietician and Diet Counseling

- Dietetics, Dietician: Definition, types, role and responsibilities of dietician.
- Diet counseling: Theories and Approaches to counseling- Reality Theory, Cognitive- Behavioral approach, Directive and non-directive Counseling.
- Counseling strategies: Individual and Group counseling.
- Motivation and Intervention model in diet counseling.
- Activities that facilitate behavioral change.

Therapeutic Diets

- Definitions: Normal diets, Therapeutic modifications of the normal diets.
- Principles in planning therapeutic diets, use of food guides and food exchange systems.
- Progressive diets: Routine/Regular hospital diets, Liquid diets, Soft diets
- Special feeding methods: Enteral and Parenteral Nutrition, Types, methods and formulation of feedings.

UNIT -II: Dietary Management in Metabolic Disorders

- Diabetes Mellitus: classification, Etiology, symptoms, Diagnosis, complications, Glycemic index and load, Dietary management of Diabetics, hypoglycemia.
- Inborn Errors of Metabolism Phenylketonuria (PKU), Maple syrup urine disease (MSUD), Galactosemia, Tyrosinemia, Homosystinuria.
- Overweight and Obesity: Classification, Etiology, assessment, factors affecting weight gain, Consequences. Management of Obesity- Dietary and Lifestyle Modifications, Preventive Aspects.

UNIT -III: Dietary Management in

- Physiologic/Metabolic Stress: Phases of stress, Consequences, Dietary management in stress, stress relieving foods.
- Surgery: Pre and post-operative dietary management.
- Febrile Conditions: Types, metabolic changes, Dietary management in fever.
- Burns: classification, causes, assessment, complications, Dietary management.
- Cancer: Types, etiology, symptoms, Diagnosis, nutrition therapy and Dietary management.
- HIV/AIDS: Pathogenesis, stages, etiology, symptoms, diagnosis, Dietary management

UNIT-IV: **Food and Drug Interactions**

- Risk factors for food and drug interactions.
- Effect of food on drug therapy.
- Effect of drug on food and nutrition.
- Modifications of drug action by food and nutrition.
- Effect of drug on nutritional status.

REFFERENCES

1. Whitney NE, Cataldo BC, Rolses RS. (1987). Understanding Normal and Clinical Nutrition" West Pub.Company. St Paul, New Yok, Los Angeles, San Fransisco.
2. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Dietherapy, 10th Edition, W.B. Saunders Ltd.
3. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition inHealth and Disease, 9th Edition, Williams and Wilkins.
4. Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/MosbyCollege Publishing.
5. Davidl. Katzwolters Kluwer/LippinCottWilliams and Wilkins. (2007). Nutrition in Clinical Practice, Second Edition.

Course Outcomes - After completion of this course, students will be able to:

CO1 Apply the concepts of Therapeutic nutrition in different diseases.
CO2 Modification of the diets appropriate to the patients in different diseases.
CO3 Planning and preparation of diets for different disease conditions.
CO4 Able to provide Diet counselling.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
CO1	3	3	3	2								2	3	3
CO2	3	3	3	2								2	3	3
CO3	3	3	3	3						2		1	3	3
CO4	3	3	3	3		3	3		2	2		1	3	3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc(Home Science) Degree Examination
First Semester
(Specialization 'A'; Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-II: FSND:102- CLINICAL NUTRITION AND DIETETICS-I

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Describe the role of a dietitian.
2. Write about Galactosemia.
3. Enlist diet counseling objectives
4. Explain directive counseling method.
5. Define TPN. Explain the mode of TPN.
6. Write about glycemic index of foods.
7. Write about the uses of Food Exchange Lists in planning therapeutic diet.
8. General principles of routine hospital diet.

S ECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks: 4x15 =60

9. (a). What are the professional qualifications and requirements of dietitians?

(or)

(b). Write about the therapeutic modifications of Normal diet.

10. (a)Explain the principles and modification of diet in Diabetes Mellitus.

(or)

(b). Explain the principles and modification of diet in Obesity.

11. (a). Explain Etiology Clinical symptoms Dietary management of HIV.

(or)

(b). Explain the principles and modification of diet in Burns

12. (a). Explain the effect of drugs on nutritional status of an individual.

(or)

(b). Explain the effect of drugs on food intake, digestion and absorption.

FSND 103-A: FOOD SCIENCE AND EXPERIMENTAL FOODS
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives -To enable the students to:

1. Acquire knowledge on Plant and Animal foods composition, processing and preservation of nutritive values.
2. Understand the principles of cookery of different foods and methods of evaluation.
3. Apply knowledge about different processing techniques on nutritive quality of foods.
4. Apply skills in standardisation of foods using different processing techniques

COMPULSORY FOUNDATION- THEORY

UNIT I: Foods of Plant Origin

- Cereals and Millets: Structure, Composition and functional properties.
- Pectin and Gums: Functional role in food products and its applications.
- Baking process: Cereal flours, Flour mixes dough and batter, Leavening agents, role of ingredients in baking process.
- Pulses and Legumes: Composition, anti-nutritional factors, Effect of cooking.
- Vegetables and Fruits: Classification, Composition, Pigments and Flavors constituents - Cooking effect, Browning reaction.

UNIT II: Foods of Animal Origin

- Milk: Composition, Kinds of milk and Functional properties of Milk.
- Egg: Structure, composition and Functional properties of eggs.
- Meat and Poultry: Structure, Muscle composition,Heat-induced changes in meat,Tenderness – Tenderizers.
- Fish and Marine foods: Classification and Composition and cooking.

UNIT III: Starch, Sugars and Fats

- Starch: Characteristics, Gelatinization, Factors affecting gelatinization, modified food starches-Applications.
- Sugars: Types of sugars and sugar syrups, Crystallization of sugars, Sugar cookery and applications.
- Fats and oils: Sources, Composition, Absorption, Functional properties of fat-Melting point, Smoke point and flash point.

UNIT IV: Sensory Evaluation

- Sensory Attributes of food quality and its characteristics.
- Requirements to conduct sensory evaluation- Sensory panel, Preparing and Presenting Samples for Testing, Panel booth.
- Sensory Tests – Analytical and Affective Tests.

REFERENCES

1. Vaclavik, V. A., Christian, E. W., & Campbell, T. (2008). *Essentials of food science* (Vol. 42). New York: Springer.
2. Khatkar, B. S. (Ed.). (2007). *Food Science and Technology*. Daya Books.
3. Srilakshmi, B. (2003). *Food science*. New Age International.

4. Khader, V. (2019). *Text book of food science and technology*. Indian council of agricultural research.
5. Belle Lowe.(1998).*Experimental Cookery*, John Wiely& Sons, INC, New York.
6. SethiMohini.(2011).*Food Science: Experiments and Application*, second edition, Jain book Agency, New Delhi.
7. N.ShakuntulaManay& M. Shadaksharswamy. (2001).*Foods- Facts and Principles*, second edition, New Age International Publishers, New Delhi.
8. Norman N Potter.(2007).*Food Science*, Fifth edition, An Aspen Publication, Mariland.

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Acquire knowledge on the functional properties of Plant and Animal foods.
CO2 Standardize the weights and measures of various food items.
CO3 Demonstrate the role of ingredients in cookery.
CO4 Apply different techniques in evaluation of food.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											3	3	3
CO2	3		3		3		3		3		2	3	3	3
CO3	3	2	3	2	3					2		3	3	3
CO4	3	2	3	1	3	2	3		3		2	3	3	3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
First Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-III: FSND 103-A: FOOD SCIENCE AND EXPERIMENTAL FOODS
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time: 3 hours Max Marks: 80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks 4x5=20

1. Write about the composition of dough and Batters.
2. What are leavening agents?
3. Explain the structure of egg.
4. Write about the classification of poultry.
5. Explain in detail about the crystallization of sugars.
6. Define rancidity in fats.
7. Write about sensory attributes of foods.
8. Write about the requirements for subjective evaluation.

S ECTION- B

Answer ALL questions
Each Question carries 15 Marks 4x15 =60 Marks

9. (a). Describe the factors affecting gelatinization.

(or)

(b).Write the classification of vegetables? Explain about the pigments and flavour constituents present in the vegetables.

10. (a).Write in detail about the kinds of milk.

(or)

(b).Give the structure of muscle and explain the post mortem changes occurred in meat.

11. (a). What are the raw materials used in confectionery and discuss their role?

(or)

(b).Explain the functional properties of fat and their use in food preparations.

12. (a).Explain in detail about the sensory testing procedures and tests.

(or)

(b). Write about the panel and selection criteria for different types of panel in sensory evaluation.

FSND 103-B: BAKING TECHNOLOGY

(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives: To enable the students to:

1. Understand the concept and technology of baking.
2. Learn the role of different ingredients in baking process
3. Familiarize with processing techniques of various bakery products
4. Develop skills in organizing and maintenance of a baking industry.

GENERIC ELECTIVE - THEORY

UNIT-I: Bakery Industry

- Introduction, current status, growth rate, and economic importance of Bakery Industry in India.
- Baking: Principles, baked foods, Baking temperatures, Knowledge and working of various types of oven, baking equipment; Roasting: Principles of roasting, roasting equipment;
- Formulations, processing (mixing, fermentation, rounding, proofing, sheeting, moulding, baking, depanning etc.), equipments, packaging, storage and quality testing of bakery products

UNIT-II: Baking Technology

- Types and grades of wheat flour, Wheat flour proteins and importance of gluten in manufacture of bakery products.
- Role of ingredients in bakery products- sugars, fats, leavening agents, additives and other ingredients.
- Types of Bakery Products and Technology for their Manufacture – dough and batters; Dough rheology.

UNIT-III: Bakery Products

- Hard wheat Products: bread- Ingredients, various types of bread, equipments and types of mixing methods, preparation of bread, Product quality characteristics, faults and corrective measures of bread.
- Soft wheat Products: cookies, crackers, biscuits– Ingredients, types, equipments, method of preparation, Product quality characteristics, faults and corrective measures.
- Ingredient used in Cake Making, types and varieties, equipments, cake making methods, Product quality characteristics, faults and corrective measures of cakes.
- Other bakery products: using very hard wheat. Pizza, pastry and its types.

UNIT- IV: Modified Bakery Products

- Modified bakery products: high fiber, low sugar, low fat, gluten free bakery products.
- Decoration of baked foods – Icing and Fillings, its types and applications in bakery. Role of other ingredients used in icing and fillings.
- Staling and Nutrient Losses in Bakery Products.

REFERENCES

1. Dubey, S.C. (2007). Basic Baking 5th Ed. ChanakyaMudrak Pvt. Ltd.

2. Manay, S. &Shadaksharaswami, M. (2004). Foods: Facts and Principles, New Age Publishers
3. Hebeda, R. (Ed.). (1996). *Baked goods freshness: Technology, evaluation, and inhibition of staling* (Vol. 75). CRC Press.
4. Manley, D. (Ed.). (2011). *Manley's technology of biscuits, crackers and cookies*. Elsevier.
5. Vaclavik, V. A., Christian, E. W., & Campbell, T. (2008). *Essentials of food science* (Vol. 42). New York: Springer.

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Acquire knowledge on bakery industry and products.
CO2 Comprehend the technology of processing of bakery products.
CO3 Demonstrate the skills in various types of bakery items.
CO4 Comprehend the technology of processing in handling the bakery.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		3		3	3	3		3	3		3	3	3
CO2	3		3		2		3	2	3		3	3		3
CO3	3		3		3	3				1	3		3	3
CO4	2		3			3	3		2		3	3	3	

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc(Home Science) Degree Examination
First Semester
(CBCS for the students admitted from 2021 onwards)
Paper:III- FSND103-B: BAKING TECHNOLOGY
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time: 3 hours Max Marks: 80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks: Marks: 4x5=20

1. Write the economic importance of bakery industry.
2. Principal of Baking.
3. Write the types of wheat flour.
4. Differentiate dough and batter.
5. Briefly write about cookies preparation procedure.
6. List down the hard and soft wheat bakery products.
7. Write the types of fillings and icings.
8. Short note on gluten free bakery products

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks:4x15 =60

9. (a) Explain the various equipment used in bakery processing and its importance.

(Or)

(b) Discuss the importance of packaging and quality factors of bakery products.

10. (a) Enumerate the importance of various ingredient used in bakery.

(Or)

(b) Explain various rheological properties associated with bakery items.

11. (a) Explain in detail about bread processing and its types.

(Or)

(b) Discuss about common faults and Corrective measures in bread and cakes.

12. (a) Write the common reasons for nutrient losses in bakery products.

(Or)

(b) Explain in detail about various decorative items in bakery and its preparation.

104-A: COMMUNITY NUTRITION
(Common to all Specializations of M.Sc. Home Science and MS Food Technology Course)

Course Objectives -To enable the students to:

1. Know about nutrients in food and their functions.
2. Understand the consequences of deficiency of taking nutrients.
3. Apply skills for planning diets for nutritional disorders.
4. Apply the techniques to assess the nutritional status of different age groups.

ELECTIVE FOUNDATION – THEORY

UNIT-I: Food Composition - Grouping

- Food Groups – Classification – food composition
- Nutritive values of different foods, Functions of foods and nutrients – cereal grains, millets, pulses, nuts and oil seeds fruits and vegetables, milk and milk products, meat, egg, poultry and fish, spices and condiments.
- Menu planning– Definition, Principles, Factors affecting menu planning

UNIT-II: Assessment of Nutritional Status of the Community

- Need - Methods of Assessment - (a) Direct Methods - (i) Diet Surveys (ii) Anthropometric Assessment - (iii).clinical and (iv). Biochemical Assessment.
- (b) Indirect Methods - Vital Statistics - Merits and Demerits of methods -
- Nutrition surveys - longitudinal and cross sectional - Family, individual and institutional surveys - Techniques for assessment of age - use of reference standards for the assessment of nutritional status.

UNIT- III: Major Nutrition Problems of the Community

- Nutrition Through Life Span – Infancy, Early and late childhood, Adolescence, Adulthood and Ageing – Nutritional requirements and Recommended Dietary Allowances (RDA)– Justification for special needs during periods of growth and development, pregnancy and lactation – significance of breast feeding .
- Malnutrition and under nutrition- PEM/CED, obesity- deficiencies vit-A, iron /iodine - Etiology –Symptoms - Government programmes to eradicate PEM, vitamin-A, Iron and Iodine deficiencies – Principles of planning diets for different conditions of malnutrition .

UNIT-IV: Strategies to Combat Malnutrition

- Food security – Definition – Management of food insecurity - -Food Fortification and enrichment.
- Food Assistance and Food Supplementation - Policies and Programmes of the Government - Governmental Policies and Programmes - Food Assistance and Food Supplementation Programmes - Public Distribution System (PDS) - Food For Work (FFW), Special Nutrition Programme (SNP), School Lunch Programme (SLP), Mid Day Meal Programme (MMP), Balawadi Nutrition Programme (BNP), Integrated Child Development Services (ICDS).
- Nutrition Education - Importance - Approaches Media and Methods.

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Course Out comes - After completion of this course, students will be able to:

CO1 Know the nutritional problems of the community.

CO2 Acquire knowledge about food groups, RDA and steps in planning a diet.

CO3 Skills in planning and calculating nutritive values for different nutritional disorders.

CO4 Understand the skills in assessing the nutritional status by different methods for different age groups.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3		2			2					2	3	
CO2	3	3	3	2			3					2	3	
CO3	3	3	3	2					2			2		3
CO4	3	3	3	2			3		2			2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
(Common to all Specializations of M.Sc Home Science and MS Food Technology Course)
First Semester
(CBCS for the students admitted from 2021-22 onwards)
Paper-IV 104-A: COMMUNITY NUTRITION

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Classification of foods.
2. Write a short note on Recommended dietary allowances.
3. Define Vital Statistics.
4. Write short note on Nutritional assessment.
5. Significance of breast feeding.
6. Clinical symptoms of Vitamin A & C deficiencies.
7. Mid-Day Meal programme.
8. What is Public distribution system.

S ECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks: 4x15 =60

9. (a) Explain about food groups, food composition and nutritive value of different foods.

(or)

(b) Define meal planning, principles and factors affecting meal planning.

10. (a).Describe briefly the methods of anthropometric measurements in altering nutritional status of the community.

(or)

(b). Explain the advantages and dis advantages of the Biochemical method of assessment of nutritional status.

11. (a) Discuss physiological changes that occur during pregnancy and state the nutritional requirements during pregnancy.

(or)

(b). State the RDA for an adolescent girl. Plan a menu and give justification.

12. (a) Discuss about food security, food fortification and enrichment.

(or)

(b) Write in detail about ICDS.

104-B: NUTRITION DURING LIFE SPAN

(Common to all Specializations of MSc Home Science and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Gain knowledge on the importance of nutrition during life span.
2. Enlighten the principles and working applications during dietary modifications.
3. Comprehensive knowledge on analysing the nutritional requirements.
4. Apply Computational skills in the Nutritional allowances during life span.

ELECTIVE FOUNDATION –THEORY

UNIT-I:Nutrition during Pregnancy & Lactation:

- Nutrient requirement during pregnancy, intake and gaps, prenatal and antenatal nutritional importance, metabolic adjustments in pregnancy.
- Nutrition intervention and pregnancy outcome, Nutritional management, problems and Complications.
- Nutritional requirements during lactation, physiology of milk production, effects of lactation on Nutrition composition of Human-Milk,
- Factors affecting breast milk quality and comparative advantages & disadvantages of breast and formula feeding.

UNIT-II:Nutrition during Infancy & Early child hood period:

- Nutritional requirements, concerns and overall development during Infancy.
- Need for infant formulae, types of infant formulae, care in Preparation, and importance of preparation of weaning foods.
- Home prepared versus commercial weaning foods, Feeding problems-Lactose and cow's milk protein intolerance.
- Pre-school children: Age, growth & development, nutrient requirements, Intake and gaps. Effects of Macro & Micro nutrient malnutrition on physical and mental development.

UNIT-III: Nutrition during School-going children & Adolescents:

- Dietary patterns and factors to be considered. Implications of childhood obesity and other nutritional concerns. Healthy food choices during childhood.
- Growth during adolescence, nutritional requirements, hormonal influences, age of menarche-factors affecting, physiological problems and nutritional issues in adolescence.
- Nutritional requirements and RDA. Behavioural characteristics and feeding problems.

UNIT-IV: Nutrition during adulthood and old age:

- Nutritional requirements for adult man and woman. Nutritional concerns, RDA, nutritional guidelines and work efficiency. Physiological changes in aging, effects of aging on nutritional health.
- Modification in diet, feeding old people. Nutritional concerns in old age and their management.

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Course Out comes- After completion of this course, students will be able to:

CO1 Acquire knowledge on nutritional requirements at various stages.

CO2 Apply the knowledge of nutrition during planning and preparation of diet.

CO3 Assess and compare diet and nutritional requirements relative to age, developmental and disease status.

CO4 Evaluate nutrition products for composition, quality, and appropriateness of use and formulate dietary interventions to address nutritional deficiencies.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS
CO1	3	3		2			2					2	3	
CO2	3	3	3	2			3					2	3	
CO3	3	3	3	2					2			2		3
CO4	3	3	3	2			3		2			2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
First Semester
(CBCS for the students admitted from 2021-22 onwards)
Paper: 104-B: NUTRITION DURING LIFE SPAN
(Common to all Specializations of M Sc Home Science and MS Food Technology Course)

Time: 3 Hrs **Max: 80 Marks**

Part – A
Answer any four questions
Each question carry equal marks (4X5=20 Marks)

1. Write the effects of lactation on nutritional composition of Human milk.
2. What are the factors that affect the breast milk quality?
3. Explain the need for infant formulae.
4. Discuss the importance of nutrition for Pre-school children.
5. Write the nutritional issues in Adolescence.
6. Discuss the Nutritional requirements for School-going children.
7. Write the effects of aging on nutritional health.
8. Explain the nutritional concerns in old age and their management pregnancy outcome.

Part – B
Answer all questions
Each question carry equal marks (4X15 = 60 Marks)

9. (a). Explain about Nutritional intervention and pregnancy outcome & write the advantage and disadvantages of breast and formulae feeding.

   (Or)

   (b). Discuss about the nutritional requirements during pregnancy and lactation? Write about common complications and problems.
10. (a).What are the effects of macro & micro nutrient malnutrition on physical and mental health?

    (Or)

    (b). Discuss about various types of Infant formulas and common problems during infancy.
11. (a). Explain the importance of nutritional requirement and RDA and discuss the importance of implications of child obesity.

    (Or)

    (b). Write in detail about various physiological problems during adolescence.

12. (a).Discuss the modification in diet, feeding old people. Nutritional requirement for adult man and woman.

(Or)

(b). Explain the principles to be considered while planning and preparation of diets of elderly.

105 – Practical I Food chemistry and Analysis and Food Science and experimental foods/Baking Technology

101 - Food Chemistry and Analysis

Course Objectives - To enable the students to:

1. Acquire hands on experience in qualitative and quantitative analysis of different foods.
2. Develop Skill in nutrient analysis of foods

PRACTICALS:

1. Volumetric analysis of Acids and Bases
2. Determination of Moisture
3. Qualitative analysis of Carbohydrates, Hydrolysis of Starch.
4. Determination of starch and sugars
5. Qualitative analysis of Proteins and Amino acids
6. Estimation of proteins - Micro-Kjeldahl method
7. Qualitative analysis of fats and oils.
8. Determination of fat in solid and liquid foods.
9. Determination of Total ash
10. Estimation of Calcium
11. Estimation of Phosphorus
12. Estimation of Iron
13. Estimation of Vitamin C

Course Out comes- After completion of this course, students will be able to:

CO1 Perform skills in qualitative and quantitative estimation of nutrients in different foods.

CO2 Describe the chemical components and their functions in Food applications.

103 A – Food Science and Experimental Foods

Course Objectives - To enable the students to:

1. Acquire skill in effect of cookery on physical, chemical and sensory properties of foods.
2. Understand the application of standardization and experimentation on different food groups

PRACTICALS:

1. Standardization of weights and measures of various foods
2. Starch cookery- Structure, gelatinization and factors affecting gelatinization
3. Baking –Determination of gluten content, Preparation of plain cake and evaluation by subjective and objective methods.
4. Pulse cookery – effect of different cooking methods

5. Vegetable and fruit – Effect of time, temperature, media and cooking methods on pigments, Enzymatic Browning- Preventive measures.
6. Sugar cookery- stages of sugar cookery and its application in Indian sweet making, fondant preparation.
7. Fats and oils – Smoke points, oil absorption and mayonnaise preparation.
8. Milk cookery - factors affecting milk cookery- Temperature, pH, acid, base, coagulation factor.
9. Egg and Meat cookery – Egg white foams, methods of cooking egg and Meat, role of tenderizers in meat cooking.
10. Sensory Evaluation of food- preparation of score card, threshold tests, sensory testing.

Course Out comes- After completion of this course, students will be able to:
CO1 Demonstrate the role of ingredients in cookery.
CO2 Apply different techniques in evaluation of food.

103 B Baking Technology

Course Objectives - To enable the students to:

1. Develop skill in formulation, standardization and evaluation techniques in bakery products.
2. Understand the concepts in the baking process.

PRACTICALS:

1. Introduction of tools and equipments of bakery products.
2. Determining the gluten content.
3. Preparation of Biscuits and Cookies.
4. Preparation of Doughnuts and Muffins.
5. Preparation of Bread and Bun.
6. Preparation of Pizza.
7. Preparation of various Types of Cakes.
8. Preparation of Filling and Icings.

Course Out comes- After completion of this course, students will be able to:
CO1 Demonstrate the skills in preparation of various types of bakery items.
CO2 Develop the skill and comprehend the technology of processing in handling the bakery.

106 – Practical II Clinical Nutrition and Dietetics -I and Community Nutrition/Nutrition during life span

102– Clinical Nutrition and Dietetics – I

Course Objectives - To enable the students to:

1. Apply Knowledge related to Therapeutic modification of diets and diet planning.
2. Plan and prepare diet for different diseases conditions.

PRACTICALS:

1. Planning and preparation of Progressive Diets
    a. Clear Fluid Diet.
    b. Full Fluid Diet,
    c. Soft Diet,
    d. Regular Diet,
2. Therapeutic Adaptations of Normal Diet
    a. High and Low-calorie diet,
    b. High and Low Protein Diet.
    c. Low fat and Low Cholesterol Diet.
    d. High and Low Fiber Diet,
    e. Sodium Restricted Diet,
    f. Low Carbohydrate Diet.
3. Preparation of case study analysis and reports
4. Planning and preparation of diets for Diabetes- Type-I, II, Gestational Diabetes.
5. Planning and preparation of diets for Overweight and Obesity
6. Planning and preparation of pre and post-operative diets
7. Planning and preparation of diets for febrile conditions
8. Planning and preparation of diets for burns
9. Planning and preparation of diets for Cancer
10. Planning and preparation of diets for HIV/AIDS

Course Out comes- After completion of this course, students will be able to:
CO1 Planning and preparation of diets for different disease conditions.
CO2 Able to provide Diet counselling.

104 A Community Nutrition

Course Objectives - To enable the students to:

1. Apply the techniques to assess the nutritional status of different age groups.
2. Apply skills for planning diets for nutritional disorders.

PRACTICALS:

1. Assessment of Nutritional Status using Anthropometry,
2. Assessment of Nutritional Status using Dietary method
3. Planning of Diets for Different Nutritional Deficiencies like PEM, Anemia, Vit-A.
4. Planning and Preparation of Programmes for Significant Days like Breast Feeding Week, Nutrition Week, World Food Day.
5. Study of the following through visits
   - Govt School Lunch Programme
   - ICDS Programme
   - Anganwadi Training Centers.
6. School Lunch Programme at Sri Venkateswara University Laboratory Nursery School.
7. Community Nutrition Programme Planning - Introduction, Identification of problem, nutritional assessment, analysis of causes, resources, constraints, selection of interventions, setting a strategy, implementations, evaluation of the programme

Course Out comes- After completion of this course, students will be able to:

CO1 Skills in planning and calculating nutritive values for different nutritional disorders.

CO4 Understand the skills in assessing the nutritional status by different method different ag

groups.

104 B Nutrition during Life span

Course Objectives - To enable the students to:

1. Apply Computational skills in the Nutritional allowances during life span.
2. Develop skill in planning and preparation of diets for different age groups.

PRACTICALS:

1. Planning and preparation of diet for pregnant women.
2. Planning and preparation of diet for lactating women.
3. Planning and preparation of weaning foods.
4. Planning and preparation of diet for pre-school child.
5. Planning and preparation of diet for school going child.
6. Planning and preparation of diet for adolescent.
7. Planning and preparation of diet for adult.
8. Planning and preparation of diet for old age.

Course Out comes- After completion of this course, students will be able to:

CO1 Assess and compare diet and nutritional requirements relative to age, developmental and disease status.

CO2 Evaluate nutrition products for composition, quality, and appropriateness of use and formulate dietary interventions to address nutritional deficiencies.

FSND 107: HUMAN VALUES AND PROFESSIONAL ETHICS – I

(Revised Syllabus with effect from 2021 onwards)

Course Objectives -To enable the students to:

1. Define the term 'ethics', 'good and bad values', crime and punishment and religious tolerance.
2. Understand the importance of good character, conduct and values embedded in various religions.
3. Apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.
4. Demonstrate knowledge of ethical values in non-class room activities, internships and field work and resolve the moral issues. .

AUDIT COURSE- THEORY

Unit-I:

- Definition and Nature of Ethics- Its relation to Religion, Politics, Business, Legal, Medical and Environment.
- Need and Importance of Professional Ethics - Goals - Ethical Values in various Professions.

Unit-II:

- Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom.
- Good behavior and respect for elders, Character and Conduct.

Unit-III:

- Ahimsa (Non- Violence), Satya (Truth), Brahmacharya (Celibacy), Asteya (Non-possession) and Aparigraha(Non- stealing).
- Purusharthas(Cardinal virtues)-Dharma (Righteousness), Artha(Wealth), Kama(Fulfillment Bodily Desires). Moksha(Liberation).

Unit-IV:

- Bhagavad Gita- (a) Niskama karma. (b) Buddhism- The Four Noble Truths – AryaAstangamarga, (c) Jainism- mahavratas and anuvratas.
- Values Embedded in Various Religions, Religious Tolerance, Gandhian Ethics.

- Crime and Theories of punishment- (a) Reformative, Retributive and Deterrent. (b) Views on manu and Yajnavalkya.

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Course Outcomes - After studying the course, students will able to:

CO1 Define the term 'ethics', 'good and bad values', crime and punishment and religious tolerance.

CO2 Understand the importance of good character, conduct and values embedded in various religions.

CO3 Apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.

CO4 Demonstrate the ability to face difficult situations in non-class room activities, internships and field work and resolve them confidently.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3						1	3	3			3		
CO2						2			3			3		
CO3						3		3	3			3		
CO4						3		3	3			3		

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
First Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-VII: FSND :107 – HUMAN VALUES AND ETHICS – I

Time: 3 Hrs **Max: 100 Marks**

Part – A
Answer any four questions
Each question carry equal marks **Marks 4X5=20**

1.
2.
3.
4.
5.
6.
7.
8.

Part – B

Answer all questions
Each question carry equal marks **Marks 4X15 = 60**

9. a)

(Or)

b)

10. a)

(Or)

b)

11. a)

(Or)

b)

12. a)

(Or)

b)

DEPARTMENT OF HOME SCIENCE
M.Sc FOOD SCIENCE NUTRITION AND DIETETICS
CHOICE BASED CREDIT SYSTEM (CBSC)
(With effect from academic year 2021-22 onwards)

SEMESTER- II
FSND 201: NUTRITIONAL BIOCHEMISTRY

Course Objectives - To enable the students to:

1. Understand the metabolism of nutrients in human physiology.
2. Acquire knowledge on factors affecting digestion, absorption of nutrients.
3. Create awareness on enzymes and its role in nutrient metabolism.
4. Apply skills in analyzing enzymes and its metabolites

CORE THEORY

UNIT- I: Metabolism of Carbohydrates and Lipids

- Carbohydrates: Functions, digestion and absorption of carbohydrates. Carbohydrate metabolism- Glycolysis, Glycogenolysis, glycogenesis and Gluconeogenesis.
- Lipids: Functions, digestion and absorption of lipids. ®oxidation of fatty acids and Cholesterol Metabolism. Lipids of biological significance - Lipoproteins and prostaglandins in health and disease.

UNIT- II: Proteins and Amino Acids

- Functions, digestion and absorption of proteins.
- Metabolism of amino acids - Amino Acid decarboxylation, Tran's peptidation. Urea cycle, creatine and Creatinine - biosynthesis.
- Nucleic acid - DNA, RNA, Bases - Purines and Pyrimidines, Synthesis of Nucleic Acids - Steps of replication - Initiation, Elongation and Termination. Protein biosynthesis.
- Enzymes – Classification, structure, functions of enzymes; factors affecting enzyme activity.
- Integration of metabolism of carbohydrates, fats and proteins, Electron Transport Chain (ETC), Oxidative Phosphorylation.

UNIT-III: Vitamins

- Fat Soluble Vitamins A, D, E and K: Absorption, Transportation, Metabolism, physiological and biochemical functions
- Absorption, Transportation, Metabolism, physiological and biochemical functions of Water-Soluble Vitamins-Thiamine, Riboflavin, Niacin, Pyridoxine, Folic acid, Pantothenic acid, Vitamin C.

UNIT- IV: Minerals and Trace elements

- Absorption, Transportation, Metabolism, Physiological and biochemical functions, of Calcium, Phosphorus, Iron, Iodine, Zinc, Sodium, Potassium,Chloride and Flourine
- Electrolytes.

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Course Out comes - After completion of this course, students will be able to:

CO1 Understand the metabolism of food and nutrients in humans.

CO2 Know metabolism of nutrients in healthy and disease individuals.

CO3 Acquire skills in Qualitative and quantitative estimation of metabolites in biological fluids.

CO4 Know Skills in analysing enzymes and its metabolites.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PSO2
CO1	3	3		3										
CO2	3	3		3										
CO3	3			3	3	2						2		
CO4	3			3	3	2						2		

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Second Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-I: FSND: 201- NUTRITIONAL BIOCHEMISTRY

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Describe Essential Amino Acids.
2. What is Glycogenolysis?
3. Write the Classification of enzymes.
4. What is the function of thyroid hormones?
5. Describe Biochemical classification of vit- A deficiency.
6. Write about the functions & RDA-of Thiamine & Riboflavin.
7. Write a note on ketone bodies..
8. What is the relationship between calcium and phosphorus?

S ECTION- B

Answer ALL questions
Each Question carries 15 Mark Marks 4x15 =60

9.(a) .Describe the TCA Cycle.

(or)

(b). Enumerate the cholesterol metabolism in the sequential order.

10.(a). Discuss the function of Lipoproteins and prostaglandins in health and disease.

(or)

(b). Explain the mechanisms of hormonal action and enumerate the role of any two hormones in human metabolism.

11.(a).Write out the fat soluble vitamins and explain the physiological functions of any two vitamins.

(or)

(b).Describe the role of Iron, Folic Acid and Vitamin B_{12} in human nutrition.

12.(a).Write the sources and physiological functions and metabolism of Iodine.

(or)

(b).Discuss requirements and deficiency symptoms of Calcium, Phosphorus and Vitamin D.

FSND 202: CLINICAL NUTRITION AND DIETETICS-II

Course Objectives - To enable the students to:

1. Understand the dietary principles for various diseases.
2. Comprehend knowledge in Dietary modifications for the management of diseases.
3. Application of principals in preparation and service of diets to the patients.
4. Able to assess the case studies and construct the diet charts.

CORE THEORY

UNIT- I: Dietary Management in Gastro Intestinal Tract Disorders

- Diseases of the Upper Gastro intestine - Gastro Esophageal Reflux Disease (GERD), Esophagitis, Hiatal Hernia.
- Diseases of the Stomach: Gastritis, Peptic Ulcer, Dumping syndrome.
- Diseases of intestine: Inflammatory bowel disease, Celiac disease, Irritable bowel syndrome, Short bowel syndrome
- Common GI problems: Diarrhea, constipation, Flatulence, Food sensitivities.

UNIT- II: Dietary Management in Disorders of Hepato –Bilary Tract

- Disorders of liver: Hepatitis, Hepatic Steatosis, Cirrhosis, Hepatic encephalopathy.
- Gallbladder Disorders**:** Chollelithiasis, Cholecystitis.
- Disorder of pancreas: pancreatitis.

UNIT- III: Dietary Management in –

- Cardiovascular Disorders **-**Dyslipidemia, Atherosclerosis, Coronary Heart disease (CHD), Hypertension (HT), Congestive Heart Failure, Angina pectoris, myocardial infraction (MI), Rheumatic Heart Disease (RHD).
- Renal Disorders-Nephrotic syndrome, glomerular nephritis, renal failure, Nephrolithiasis, urinary tract infection, dialysis.

UNIT-IV: Dietary Management in -

- Neurological Disorders –Migraine syndrome, Alzheimer's disease, Parkinson's disease.
- Musculoskeletal and Rheumatic Disorders- Osteoporosis, Osteoarthritis, Rheumatoid Arthritis, Gout.

REFERENCE

1. Whitney NE, Cataldo BC, Rolses RS. (1987).Understanding Normal and Clinical Nutrition" West Pub.Company. St Paul, New Yok, Los Angeles, San Fransisco.
2. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet a Therapy, 10th Edition, W.B. Saunders Ltd.
3. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition inHealth and Disease, 9th Edition, Williams and Wilkins.
4. Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/MosbyCollege Publishing.
5. Davidl. Katzwolters Kluwer/LippinCottWilliams and Wilkins. (2007). Nutrition in Clinical Practice Second Edition.
6. ShubhanginiA.Joshi. (2010). Nutrition and Dietetics Third Edition Tata Mecgraw Hill Education Private Limited New Delhi.

Course Out comes - After the completion of the course, the students will able to:

CO1 Apply the concepts of threupatic modification of diets for the diseases.
CO2 Calculate nutrients and modifiy diets for the diseases.
CO3 Skills in Planning and preparation of diets for different disease conditions.
CO4 Able to know patient Diet service management and counselling.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3				2	2		2	2		2	3	
CO2	3	3				2	2		2	2		2	3	
CO3	3	3	2	3		3	3		3	2		2		3
CO4	3	3	2	3		3	3		3	2		2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY :: TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Second Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper:II- FSND: 202- CLINICAL NUTRITION AND DIETETICS-II

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. List down the Risk factors for Cardiovascular Disorders.
2. What are the Dietary Principles for Gout?
3. Write the types of Diarrhea and the dietary management.
4. Write about Glomerulonephritis.
5. What is the etiology of peptic ulcer?
6. Write the dietary management for Osteoporosis.
7. Describe the GERD.
8. What is GFR?

S ECTION- B

Answer ALL questions
Each Question carries 15 Mark Marks:4x15 =60

9.(a). Describe the dietary management of Inflammatory bowel disease.

(or)

(b). Explain the principles of diet in constipation and Flatulence. Describe their dietary management.

10.(a).Describe the dietary management of Cirrhosis of liver.

(or)

(b).What is cholecystitisandchollelithiasis. Describe their etiology, diagnosis and dietary Management?

11.(a).Write the role of n-3 and n-6 fattly acids in prevention of coronary heart diseases.

(or)

(b).Explain the need and nutritional requirements during dialysis.

12.(a). What are the nutritional considerations in Alzheimer's disease?

(or)

(b). Explain the etiology of Rheumatic Disorders and write the Nutritional consideration

In Rheumatoid Arthritis.

FSND 203-A: FOOD MICROBIOLOGY AND SAFETY
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Obtain knowledge about important genera of microorganisms associated with food.
2. Acquaint food contaminants and their sources.
3. Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms.
4. Demonstrate the use of standard methods and procedures for the microbiological analysis of food.

COMPULSORY FOUNDATION- THEORY

UNIT- I: Introduction to Food Microbiology

- Classification and growth of microorganism, factors affecting microbial growth.
- General characteristics, structure, classification, morphological characteristics, cultural characteristics of bacteria, fungi, virus, protozoa, and algae.
- Role of Harmful and beneficial microorganisms in food.

UNIT -II: Food Contamination and Spoilage

- General principles underlying spoilage: causes of spoilage, classification of foods based on spoilage and changes caused by microorganisms.
- Sources of contamination and types of spoilages among plant origin foods:
  - Cereals, Legumes, nuts and oil seeds
  - Fruits and Vegetable products
  - Spices and condiments

UNIT- III: Food Contamination and Spoilage of Animal origin and Processed Foods

- Sources of contamination and types of spoilages among :
  - Milk and Milk products
  - Eggs, poultry and Meat
  - Fish and Other sea foods
  - Sugars and sugar products
  - Processed foods

UNIT- IV: Food Borne Diseases and Food Safety

- Food borne diseases – Food Infection and Intoxication Sources of infection of food by pathogenic organisms and physiological action, Signs and symptoms of various Bacterial Food-borne poisoning and Non-bacterial food-borne poisoning.
- Food safety: concept, factors affecting food safety, biological hazards.
- Applications of Food Microbiology- probiotics, prebiotics, microbial enzymes, fermentation process.

REFERENCES

1. Jay, J. M., Loessner, M. J., & Golden, D. A. (2008). *Modern food microbiology*. Springer Science & Business Media.
2. Banwart, G. (2012). *Basic food microbiology*. Springer Science & Business Media.
3. Matthews, K. R., Kniel, K. E., & Montville, T. J. (2017). *Food microbiology: an introduction*. John Wiley & Sons.
4. Adams,M.R. and Moss,M.O.(2003). *Food Microbiology*, Second edition, Panima Publishing Corporation, New Delhi.
5. James,M.Jay.(2005). Modern *Food Microbiology*, 4th edition, CBS publishers and Distributors, New Delhi.
6. William.C.Frazier and Denni, S.C. Westhoff. (2004). *Food Microbiology*, 4th edition, Tata MCGraw-Hill publishing company Ltd, New Delhi.

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Identify the important genera and factors associated with food spoilage.

CO2 Elucidate the food contaminants in different types of food commodities.

CO3 Describe the characteristics of food borne diseases, infections and intoxications and their identification.

CO4 Demonstrate the use of standard methods and procedures for the microbiological analysis of food.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3									3	3	3	3
CO2	3	3		2							2	3	3	3
CO3	3	3										3	3	3
CO4	3	3			2			2			3	3	3	3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc (Home Science) Degree Examination
Second Semester
(Specialization 'A'; Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021 onwards)
Paper:III- FSND: 203-A FOOD MICROBIOLOGY & SAFETY
(Common Paper to MSc. Food Science Nutrition and Dietetics and MS Food Technology)

Time: 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Role of Microorganism in food industry.
2. Write the general Characteristics of bacteria.
3. Describe the different types of food spoilage.
4. How cereals and cereal products are contaminated.
5. Write the contamination sources of milk.
6. Describe the common spoilages in fish.
7. Write a short note on food borne infections.
8. How microbiology and food safety is related.

S ECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks 4x15 =60

9. (a) Explain the factors affecting microbial growth.

(or)

(b) Discuss about classification, morphological and cultural characteristics of viruses.

10. (a)Write the principles underlying food spoilage and discuss the common spoilages in fruits
and vegetables.

(or)

(b). Describe the common food spoilages and common microbial spoilages in cereals and cereal products.

11. (a). Discuss the sources of contamination and spoilages in flesh foods.

(or)

(b). Enumerates the spoilages and sources of contamination in sugars and processed foods.

12. (a) Discuss in detail about various food borne intoxications with examples.

(or)

(b) Write in detail about food microbiology applications.

FSND 203--B: NUTRITION IN EMERGENCIES AND DISASTER MANAGEMENT (Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives - To enables the students to:

1. Understand the emergency situations in natural and manmade disasters.
2. Gain knowledge on nutrition surveillance and treatment in emergencies.
3. Knowledge on planning nutrition relief and rehabilitation in emergencies.
4. Explain concepts on Epidemiology and its application in planning programs during emergencies.

GENERIC ELECTIVE- THEORY

UNIT-I: Disasters

- Natural/Manmade disasters resulting in emergency situations:Famine, drought, flood, earthquake, cyclone, war, civil and political emergencies, Factors giving rise to emergency situation in these disasters.
- Nutritional problems in emergencies in vulnerable groups: Causes of malnutrition in emergency situations, Major deficiency diseases in emergencies, Protein – Energy Malnutrition / Starvation / Under Nutrition, Specific Nutrient deficiencies - Energy, Vitamins, Minerals
- Communicable disease: Surveillance and treatment.Control of communicable diseases in emergencies – Role of immunization and sanitation.

UNIT-II: Assessment

- Assessment and surveillance of Nutritional status in emergency affected populations: Scope of assessment of malnutrition in emergencies, Indicators of malnutrition. Clinical signs for screening acute malnutrition, Anthropometric assessment of nutritional status.
- Indicators and cut-offs indicating seriously abnormal nutrition situation: Weight for height based indices, MUAC, social indicators.
- Organization of nutritional surveillance and individual screening.

UNIT-III: Nutritional Relief and Rehabilitation

- Assessment of food needs in emergency situations, Food distribution strategy – Identifying and reaching the vulnerable group – Targeting Food Aid.
- Mass and Supplementary Feeding, Therapeutic Feeding, Special foods/rations for nutritional relief, Local production of special foods, Local foods in rehabilitation
- Organisation of mass feeding/general food distribution, Feeding centers, Transportation and food storage, Sanitation and hygiene, Evaluation of feeding programmes, Household food security and nutrition in emergencies

- Public nutrition approach to tackle nutritional problems in emergencies

UNIT-IV: Nutritional Epidemiology

- Introduction to Epidemiology – types of epidemiology, collection of epidemiological data, secondary routine date, Descriptive epidemiology, Cross sectional Analysis, prevalence and incidence, risk factors, risks and odds, relative and attributable risks
- Principles of Nutritional Epidemiology, Measurement issues, Measurement of disease, Occurrence and Measurement of association, Exposure and outcome, Socio demographic and Psycho social variables.
- Design and Planning of Nutritional Epidemiological studies – assessing and supplying And Evaluating Epidemiological studies – Discussion of selected case studies

REFERENCE

1. World Disasters Report – Focus on Public Health, International Federation of Red Cross and Red Crescent Societies.
2. Disasters – International Public Nutrition and Emergencies: The Potential for improving practice. Special Issue – Vol.23/4, Dec. 1999.
3. Guidelines and Research publications of OXFAM, WFP, Rome. 1999. Nutrient Requirements and Recommended Dietary Allowance for Indians A Report of the Expert Group of ICMR. 2010.
4. Dr.M Swami Nathan. (2010). Food and Nutrition Volume-2 Second Edition theBangalore Printing and Publishing Co Ltd Bangalore 560018.
5. ShubhanginiA.Joshi. (2010). Nutrition and Dietetics Third Edition Tata Macgraw Hill Education Private Limited New Delhi.

Course Out comes - After completion of this course, students will be able to:

CO1 Acquire knowledge in nutritional problems in natural and man made disasters.

CO2 Assess the nutritional status in emergency and plan surveillance and treatment to the affected.

CO3 Acquire knowledge on nutrition epidemiology.

CO4 Plan and Execute nutrition rehabilitation in emergencies.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								3	3		3	3	
CO2	3	2		2					3	3		3		
CO3	3		2	2			2	2				3		3
CO4	3		3			2			3			3		

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)

FSND 203-B: NUTRITION IN EMERGENCIES AND DISASTER MANAGEMENT

(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Famine.
2. Immunization.
3. MUAC.
4. Nutritional surveillance.
5. Targeting Food Aid.
6. Special foods/rations for nutritional relief.
7. Epidemiological data.
8. Psycho socio variables.

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks: 4x15 =60

9.(a). Discuss the causes of malnutrition in emergency situations and major deficiency diseases in emergencies.

(or)

(b).What are the communicable diseases that occur during emergencies? Discuss in detail about any one disease treatment and control.

10.(a). Discuss in detail about the nutritional assessment and surveillance in emergency affected populations.

(or)

(b). Write about methods of organizational surveillance and individual screening during emergencies.

11.(a). Write in detail about the assessment of food needs in emergency situations.

(or)

(b). Discuss in detail about the food storage and house hold food security in emergencies.

12.(a). What is Nutritional epidemiology? Discuss in detail about design and planning of nutritional epidemiological studies.

(or)

(b). Discuss in detail about types of epidemiology and collection of epidemiological data.

FSND 204-A: RESEARCH METHODOLOGY
(Common to All branches of Home Science and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Get awareness about terms like 'variables', 'hypothesis', research 'and recognize the purpose of doing research.
2. Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research.
3. Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling.
4. Develop a research proposal in the appropriate scientific style.

ELECTIVE FOUNDATION-THEORY

UNIT – I : Research Purpose and Types

- Research – Significance, meaning, objectives, Approaches,
- Research process, Criteria of good research, Variable- types
- Types of Research: Historical, descriptive, experimental, case study, survey research, participatory research, Fundamental, applied and action, exploratory research.
- Research hypothesis-Characteristics of good hypothesis.
- Research Design – Meaning, Need, Concepts, Principles and Types of research design

UNIT – II: Research Problem and Sample design

- Definition and Identification, Necessity and Selection of Research problem, Technique involved in defining the research problem.
- Population and Sample – Implications, Steps, Criteria and Characteristics of a good design
- Sampling Methods : *Probability sampling*- Simple random, systematic random sampling, two Stages and multi stage sampling, cluster sampling and *Non-probability sampling* - Purposive, quota and volunteer sampling / Snowball Sampling.

UNIT –III : Methods of Data Collection

- Primary and Secondary Data, Selection of appropriate method for data collection
- Different Methods and techniques of data collection - Interview, Observation, Social mapping, Participatory assessment Techniques, Observation check list, Questionnaire, Interview schedule, Group discussions, Case studies

UNIT –IV: Measurement Scales

- Measurement in Research, Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement,Technique of Developing Measurement Tools, Scaling, Meaning of Scaling,Scale Classification Bases,Important Scaling Techniques
- Research Proposal – Preparation.

REFERENCES

1. Kothari, C.R. (2004).:*"Research Methodology (Methods and Techniques)".* New Age International (p) Ltd., New Delhi.
2. Bandarkar, P.L. and Wilkinson T.S. (2000) :*"Methodology and Techniques of Social Research"*, Himalaya Publishing House, Mumbai.
3. Batnagar, G.L. (1990) :*"Research Methods and Measurements in Behavioural and Social Sciences",* Agri. Cole publishing Academy, New Delhi.
4. BajPai S.M. (1987). *"Methods of Social Survey and Research"*KitabGhat, Kanpur-3
5. Black, T.R. (1999).:*"Doing Quantitative Research in the Social Sciences"*, Sage Publications, New Delhi.
6. Dev Doss R.P. and Kulandavel K (1985).*"Hand book of methodology of research"* Oxford Press,
7. Goode J.W. and Hatt P.K. *"Methods in Social Science Research"* Mc. Graw hill-Co. New York.
8. Sharma S.R. (1994). *"Statistical methods in Educational Research"*, Anmol Publications Pvt. Ltd., New Delhi.

Course Outcomes - After studying the course, students will able to:

CO1. Define terms like 'variables', 'hypothesis' ,research'and state the purpose of doing research

CO2. Understand different types of search and can compare the advantages and dis-advantages of each type of research

CO3. Critically know the procedures for identifying an ideal sample for scientific research.

CO4. Prepare a research proposal in the appropriate scientific style .

CO-PO Mapping

Coursee	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3		3	2		2		2	3		
CO2				3		3	3				2	3		
CO3		1		3		3			2		3	3		
CO4				3		3	3		3			3		

H-High-1, M- Medium-2, L- Low-3

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Second Semester
(Common to All branches of Home Science and MS Food Technology Course)
(CBCS for the students admitted from 2021-22 onwards)
Paper-IV: FSND 204-A:RESEARCH METHODOLOGY

Time:3 hrs Max: 80 Marks

SECTION- A

Answer any four questions
Each question carry equal marks Marks:4X5=20

1. Define research. Enumerate the significance of research.
2. Explain the need and features of a good research design.
3. Write about Quota and snow ball sampling.
4. Describe case study as a research technique.
5. What is meant by primary and secondary data?
6. Give an account of Nominal scale.
7. What is Social mapping?
8. Write about Observation check list.

S ECTION- B

Answer all questions
Each question carry equal marks Marks: 4 X 15=60

9. (a).Write in detail about types of research.

(Or)

(b).Write about the types of research design.

10.(a).Explain in detail about the definition , identification and selection of research problem.

(Or)

(b).Define qualitative research and explain the types of qualitative research.

11.(a). What is data? Explain in detail different methods of data collection.

(Or)

(b). Describe in detail about the Observation and Interview methods of data collection.

12.(a). What is Measurement scales? Explain its significance in statistical analysis?

(Or

(b). Explain in detail about the steps in preparing a research proposal.

204 -B: STATISTICS AND COMPUTER APPLICATIONS
(Common to All branches of Home Science and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Get awareness about the scope of statistics in research.
2. Understand the concepts of inferential statistics like t-test, chi-square, Correlation and Variance.
3. Critically apply knowledge of application of statistics in data analysis.
4. Apply skills in using computer applications for data analysis

ELECTIVE FOUNDATION-THEORY

UNIT- I: Statistics

- Statistics: Meaning, Definition and Scope, limitations – Role of statistics in Research
- Descriptive Statistics: Classification and tabulation of data, Graphic and diagrammatic presentation of data, measurement of central tendency, variation and dispersion, Normal distribution, Frequency distribution, histogram, frequency polygons, curve ogive
- Levels of Significance

UNIT – II: Inferential statistics

- 't' test for large samples (mean and proportions) and small samples
- Chi square test for significance and association
- Analysis of variance-one way, two way
- Correlation, coefficient of correlation, rank correlation

UNIT – III: Computer Applications I

- Introduction to Computer-Block diagram, PC and its components, Memory capacity, Physical storage of data, various devices, Hardware and software operating- DOS commands for file handling.
- MS Office and its component – Word and its applications/ creating documents, editing spell check, auto correct and print preview, creating tables and sorting data in tables, mail merge and its usage.

UNIT – IV: Computer Applications II

- MS Excel for data analysis - Work sheet and its structure, data entry, editing, Sorting filtering and copying.
- Statistical functions in Excel – Data analysis park for performing descriptive statistics, t-test, ANOVA, Correlation and regression.

- Graphs in Excel – Various types of graphs, editing graphs

REFERENCES

1. Kothari, C.R. (2004).:*"Research Methodology (Methods and Techniques)".* New Age International (p) Ltd., New Delhi.
2. Bandarkar, P.L. and Wilkinson T.S. (2000) :*"Methodology and Techniques of Social Research"*, Himalaya Publishing House, Mumbai.
3. Batnagar, G.L. (1990) :*"Research Methods and Measurements in Behavioural and Social Sciences",* Agri. Cole publishing Academy, New Delhi.
4. BajPai S.M. (1987). *"Methods of Social Survey and Research"*KitabGhat, Kanpur-3
5. Black, T.R. (1999).:*"Doing Quantitative Research in the Social Sciences"*, Sage Publications, New Delhi.
6. Dev Doss R.P. and Kulandavel K (1985).*"Hand book of methodology of research"* Oxford Press,
7. Goode J.W. and Hatt P.K. *"Methods in Social Science Research"* Mc. Graw hill-Co. New York.
8. Sharma S.R. (1994). *"Statistical methods in Educational Research"*, Anmol Publications Pvt. Ltd., New Delhi.

Course Outcomes - After studying the course, students will able to:

CO1. Define terms like 'frequency distribution', 'Variance' , 'Correlation' and its scope in research data

CO2. Understand different types of statistics that are used in research data.

CO3. Critically know the calculations of different statistics of research data.

CO4. Apply skills in using computer applications for data analysis

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3		3	2		2		2	3		
CO2				3		3	3				2	3		
CO3		1		3		3			2		3	3		
CO4				3		3	3		3			3		

H-High-1, M- Medium-2, L- Low-3

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Second Semester
(Common to All branches of Home Science and MS Food Technology Course)
(CBCS for the students admitted from 2021-22 onwards)
Paper-IV: FSND 204-B: STATISTICS AND COMPUTER APPLICATIONS

Time:3 hrs Max: 80 Marks

SECTION- A

Answer any four questions
Each question carry equal marks Marks:4X5=20

1. Frequency distribution.
2. Histogram.
3. Rank correlation.
4. Mean.
5. File handling.
6. Computer software.
7. What is data analysis?
8. Descriptive statistics.

S ECTION- B

Answer all questions
Each question carry equal marks Marks: 4 X 15=60

9. (a). What is a *t*-test? When it is used and for what purpose(s)? Explain by means of examples. (Or)

(b). In a test given to two groups of students, the marks obtained were as follows: *First Group* 18 20 36 50 49 36 34 49 41 *Second Group* 29 28 26 35 30 44 46 Examine the significance of difference between mean marks obtained by students of the above two groups. Test at five per cent level of significance.

10. (a). 200 digits were chosen at random from a set of tables. The frequencies of the digits were: Digit 0 1 2 3 4 5 6 7 8 Frequency 18 19 23 21 16 25 22 20 21 Calculate χ^2 .(Or)

(b). What is Chi-square text? Explain its significance in statistical analysis.

11.(a). What is data? Explain in detail the data processing and analysis in computers. (Or)

(b). Describe in detail about the PC and its components.

12.(a). What is an excel sheet? Explain its significance in statistical analysis?

(Or)

(b). Explain in detail about the steps in preparing different graphs in computers.

205 – Practical I Nutritional Biochemistry and Food Microbiology and safety/Nutrition in Emergencies and disaster management

201 – Nutritional Biochemistry

Course Objectives - To enable the students to:

1. Acquire skills in analyzing the biochemical parameters in blood and serum.
2. Appraise the normal and abnormal levels of biochemical parameters in different conditions.

PRACTICALS:

1. Estimation of Blood glucose.
2. Estimation of Serum Proteins by Biuret
3. Estimation of Serum Triglycerides.
4. Estimation of Serum Cholesterol.
5. Estimation of Serum Iron
6. Estimation of Haemoglobin
7. Microscopic Examination of Blood Smear for types of blood cells.
8. Estimation of Packed cell volume in the blood.
9. Estimation of Serum Calcium.
10. Normal and abnormal urine analysis.

Course Outcomes - After studying the course, students will able to:

CO1 Acquire skills in Qualitative and quantitative estimation of metabolites in biological fluids.

CO2 Know Skills in analysing the biochemical levels and its relation to normal and abnormal conditions.

203-A Food Microbiology and Safety

Course Objectives - To enable the students to:

1. Demonstrate the use of standard methods and procedures for the microbiological analysis of food.
2. Understand the techniques for identification, isolation and confirmation of microbes in fresh and processed foods.

PRACTICALS:

1. Laboratory safety rules and precautions
2. Familiarization with Instruments used in Microbiological Lab, their principles and working.
3. Sterilization methods
4. Sampling techniques
5. Isolation techniques
6. Various types of media preparation and Methods of sterilization of media
7. Microbial Staining Techniques

8. Microbial examination of fresh food products: Identification, isolation and confirmation
9. Microbial examination of processed foods: Identification, isolation and confirmation.
10. Detection of E.coli from food sample

Course Outcomes - After studying the course, students will able to:

CO1 Skill development in standard methods and procedures for the microbiological analysis of food.

CO2 Acquaint with skill of preparing and sterilization techniques of media.

203-B Nutrition in Emergencies and Disaster Management

Course Objectives - To enable the students to:

1. Explain concepts on Epidemiology and its application in planning programs during emergencies.
2. Skill development in rapid assessment techniques.

PRACTICALS:

1. Collection of epidemiological data-a hands on experience.
2. Selection and Rapid assessment of nutritional status in a community.
3. Case study approach on causative factors and management of communicable diseases.
4. Planning and formulation of nutrient dense foods.
5. Survey on adherence to immunization schedule and vaccines.

Course Outcomes - After studying the course, students will able to:

CO1 Acquire knowledge on nutrition epidemiology procedures.

CO2 Plan and Execute nutrition rehabilitation in emergencies.

206 – Practical II Clinical Nutrition and Dietetics and Research Methodology/Statistics and Computer applications

202 – Clinical Nutrition and Dietetics – II

Course Objectives - To enable the students to:

1. Application of principals in preparation and service of diets to the patients.
2. Able to assess the case studies and construct the diet charts.

PRACTICALS:

1. Planning and preparation of diets for Upper gastro intestinal disorders-Gastritis, Peptic Ulcer
2. Planning and preparation of diets for Lower gastro intestinal disorders- Celiac Disease Diarrhea, constipation
3. Planning and preparation of diets for Liver- Hepatitis, Hepatic Steatosis, Cirrhosis
4. Planning and preparation of diets for Hypertension, Atherosclerosis, Coronary Heart disease
5. Planning and preparation of diets for Nephrotic syndrome, glomerular nephritis
6. Planning and preparation of diets for Nephrolithiasis,
7. Planning and preparation of diets for dialysis
8. Planning and preparation of diets for Alzheimer's disease, Parkinson's disease
9. Planning and preparation of diets for Osteoporosis, Osteoarthritis, Rheumatoid Arthritis, Gout
10. Preparation of Diet charts.

Course Outcomes - After studying the course, students will able to:

CO1 Skills in Planning and preparation of diets for different disease conditions.

CO2 Able to know patient Diet service management and counselling.

204-A Research Methodology

Course Objectives - To enable the students to:

1. Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling.
2. Develop a research proposal in the appropriate scientific style.

PRACTICALS

1. Identification of different variables in specialization of study.
2. Framing of hypothesis-Null and alternate Hypothesis
3. Preparation of schedule/questionnaire.
4. Preparation of research proposal

5. Study of an article in a journal-Abstract, Methodology, Results and Bibliography

Course Outcomes - After studying the course, students will able to:

CO1 Critically know the procedures for identifying an ideal sample for scientific research.

CO2 Prepare a research proposal in the appropriate scientific style.

204-B Statistics and Computer Applications

Course Objectives - To enable the students to:

1. Critically apply knowledge of application of statistics in data analysis.
2. Apply skills in using computer applications for data analysis

PRACTICALS

1. Graphic and diagrammatic presentation of data.
2. Calculation of Averages- Arithmetic mean, mode and median.
3. Calculation of Standard deviation and 't' test for large and small samples.
4. Calculation of Correlations.
5. Calculation of chi square to find out significance of association.

Course Outcomes - After studying the course, students will able to:

CO1 Critically know the calculations of different statistics of research data.

CO2 Apply skills in using computer applications for data analysis

FT-207: HUMAN VALUES AND PROFESSIONAL ETHICS - II

(Revised Syllabus with effect from 2021 onwards)

Course Objectives - To enable the students to:

1. Associate the terms 'value education' 'self-introspection' and 'self-esteem' which are the core aspirations of all human beings.
2. Understand the importance of ethics in different fields like medical, business, environment and social ethics and ethics of media.
3. Apply the knowledge to assess issues and problems in each profession and correlate the concepts in addressing the ethical issues while choosing and joining a profession.
4. Develop all round and well balanced personality of the students and shapes them to become morally finer, socially responsible and physically fit persons of the society.

AUDIT COURSE- THEORY

UNIT-I:

- Value Education- Definition - relevance to present day - Concept of Human Values - self introspection – Self-esteem - Family values-Components, structure and responsibilities of family.
- Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-II:

- Medical ethics- Views of Charaka, Sushruta and Hippocratus on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients.
- Social justice in health care, human cloning, problems of abortion. Ethical issues in genetic engineering and Ethical issues raised by new biological technology or knowledge.

UNIT-III:

- Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions.
- Characterics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.

UNIT-IV:

- Environmental ethics- Ethical theory, man and nature- Ecological crisis, Pest control, Pollution and waste.

- Climate change, Energy and population, Justice and environmental health.

Unit-V:

- Social ethics- Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics. Surrogacy/pregnancy.
- Ethics of media- Impact of Newspapers, Television, Movies and Internet.

REFERENCES

1. John S Mackenjie: A manual of ethics.
2. The Ethics of Management" by Larue Tone Hosmer. Richard D. Irwin Inc.
3. "Management Ethics' integrity at work' by Joseph A. Petrick and John F. Quinn. Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. SusrptaSamhita: Tr.KavirajKunjanlal, KunjalalBrishagratha. Chowkarnba Sanskrit series. VolLlI and Ill, Varnasi, Vol I 00,16'20,21-32 and 74-77 only.
6. CarakaSamhita :Tr.Dr. Ram Karan Sarma and VaidyaBhagavan Dash, Chowkambha Sanskrit Series office. Varanasi I, 11.111 VolIPP 183-191.
7. Ethics, Theory and Contemporary Issues. Barbara Mackinnon Wadsworth/Thomson Learning, 2001.
8. Analyzing Moral.Issues, Judith A. Boss. May Field Publishing Company - 1999.
9. An Introduction to Applied Ethics (Ed.) John H.Piet and Ayodhya Prasad. Cosmo Publications
10. Text Book for Intermediate First Year Ethics and Human Values. Board of Intermediate Education- Telugu ~ Akademi, Hyderabad.

Course Outcomes -After studying the course, students will able:

CO1 Associate the terms 'value education' 'self-introspection' and 'self-esteem' which are the core aspirations of all human beings.

CO2 Understand the importance of ethics in different fields like medical, business, environment and social ethics and ethics of media.

CO3 Apply the knowledge to assess issues and problems in each profession like medical, business , environment and social ethics and ethics of media and correlate the concepts in addressing the ethical issues while choosing and joining a profession.

CO4 Apply skills for anger management, care of elderly, environmental protection and thereby develop well balanced personality and will contribute to society as morally finer, socially responsible and physically fit persons.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											3		
CO2									3			3		
CO3	1								3			3		
CO4		2			2			1	3			3		

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination

DEPARTMENT OF HOME SCIENCE
M.Sc FOOD SCIENCE NUTRITION AND DIETETICS
CHOICE BASED CREDIT SYSTEM (CBSC)
(With effect from academic year 2021-22 onwards)

FSND- 301: FOOD PROCESSING AND PRESERVATION TECHNOLOGY
(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives-To enable the students to:

1. Understand the principles and scope of food processing and preservation.
2. Get an overview on various techniques/methods in food processing and preservation.
3. Acquire knowledge of emerging technologies and their applications in food processing and preservation.
4. Equip with skills required for process and preserve various food products.

CORE THEORY

UNIT- I: Food Processing and Preservation – An Introduction

- Need, Purpose, Principles and Methods of food processing and preservation. Definitions
- Traditional Methods of food processing and preservation.
- Preservatives and Additives –Definitions, Classification, applications, permissible limits and safety aspects.

UNIT-II: Methods of Food Processing and Preservation

- Processing and preservation by Heat - Principles of thermal processing, blanching, pasteurization, UHT processing, thermal sterilization, canning, extrusion.
- Processing and preservation by Cold- Refrigeration and freezing, methods of freezing, effect on quality of foods.
- Processing and preservation by Drying and Dehydration -Types, Methods and their suitability for different food products.
- Processing and preservation by Concentration – Types, Methods and their suitability for different food products.

UNIT- III: Processing and Preservation by Fermentation

- Definition, types, Importance, Technology, Benefits and Limitations.
- Processing and preservation of fermented foods – Cereal and pulse products, Fruits and Vegetables, Milk products, meat products, Beverages.

UNIT- IV: Advanced Food Processing Technologies

- Irradiation, High Pressure Processing, Pulse Electric Field, Microwave, Ohmic Heating, Reverse Osmosis, Ultra Filteration and Membrane Processing.
- Minimal Processing, Edible Coatings and Films, Encapsulation, Nano technology Hurdle Technology, Artificial Intelligence (AI) Technologies and Advanced Robotics in Food Industry

REFERENCES

1. Fellows,P. and Ellis,H. (1990). Food Processing Technology: Principles and Practice,New York.
2. ShafiurRahman, (2011), Hand book of food preservation, CRC Press, Newyork.
3. Harry. W. Von Loesecke.(1998). Drying and dehydration of Foods, Allied Scientific,NewDelhi.
4. Jelen,P.(1985). Introduction to Food Processing, Prentice Hall, Reston Virginia, USA.
5. Lewis, M.J. (1990). Physical Properties of Food and Food Processing Systems,Woodhead, UK.
6. Norman, N. Potter, Joseph H. Hotchkiss.(1996). Food Science, 5th edition, CBS Publishers &Distributors, New Delhi.
7. Rama swamy,H. and Marcote,M. (2005).Food processing- principals and applications, CRC Press, Newyork

Course Outcomes -After the completion of the course, the students will be able to:

CO1 Conceptualize principles of traditional and novel food processing and preservation technology.

CO2 Understand the applications and limitations of food processing and preservation technology.

CO3 Comprehend the functions and applications of food preservatives and additives.

CO4 Apply appropriate technologies to process and preserve the foods to extend their shelf life.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				3						2	3	3	3
CO2	3	2			3			L			2	3	3	3
CO3	3			2	3			3	3	2	3	3	3	3
CO4	3		3	3	3	2		L	3		3	3	3	3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI

Model Question paper

M.Sc(Home Science) Degree Examination

Third Semester

(Specialization 'A'; Food Science Nutrition and Dietetics)

(CBCS for the students admitted from 2021-22 onwards)

Paper-I:FSND 301: FOOD PROCESSING AND PRESERVATION TECHNOLOGY

(Common to MSc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following

Each question carries 5 marks Marks: 4x5=20

1. Write the traditional methods of food preservation.
2. Write about the need and purpose of food processing.
3. Explain the Process of blanching of fruits &Vegetables.
4. Define Thermal death time and thermal Death Rate.
5. Explain the importance of fermentation.
6. Give a short notes on extrusion.
7. What are the intermediate moisture foods?
8. Write the advantages and disadvantages of Irradiation.

S ECTION- B

Answer ALL questions

Each Question carries 15 Mark Marks: 4x15 =60

9. (a)Explain in detail about the principles & methods of food processing and preservation.

(or)

(b).What is food preservative? Classify the preservatives with examples? Describe their functional applications in foods.

10.(a). Write in detail about processing of wine and explain.

(or)

(b).Write the role of fermentation in bread making?

11.(a). Explain the process of ohmic heating &Discuss the role of it in food processing.

(or)

(b). What is meant by nanotechnology & Explain its applications in foods?

12.(a). What are the various methods of preservation using low temperatures?

(or)

(b).What are the various methods of preservation using high temperatures?

FSND 302: ADVANCES IN HUMAN NUTRITION

Course Objectives - To enable the students to:

1. Know the advance concepts of nutrition of Brain, Immunity and Sports.
2. Understand the concepts of dietary management in endemic nutrition problems.
3. Create knowledge on the dietary management during emergencies.
4. Planning and preparation of foods in special needs like space, high altitudes and low temperatures.

CORE THEORY

UNIT-I: Nutrition, Brain and Behaviour

- Brain – Structure, composition and functions and neurological tests-EEG, PET, MRI.
- Neurotransmitters- Nutrient precursors of neurotransmitters – Tryptophan, tyrosine, choline and lecithin
- Role of neurotransmitters in Brain function
- Role of Nutrients on Brain growth and development

UNIT-II: Nutrition and Immunity

- Innate and Acquired immunity – Primary and secondary immune response, Active and Passive, Antigen, Antibody Cell mediated immunity, Humoral immunity-Formation, maturation and activation of B and T cells, Immune effectors system- cytokines complement system, K cells and NK cells, Cell mediated effectors response,
- Role of nutrients in immunity
- Effect of malnutrition on immunity

UNIT-III: Endemic Nutrition Problems and their Management

- Flurosis – Aetiology, prevalence, symptoms and nutritional management
- Iodine deficiency disorders - Aetiology, prevalence, symptoms and nutritional management
- Osteoporosis - Aetiology, prevalence, symptoms and nutritional management.

UNIT-IV: Principles of Nutrition and management systems in Disasters and Emergencies and Special Environments.

Nutrition in Disasters

- Disaster management –Natural and Man made Disasters.
- Assessment of food needs in emergency situations.
- Food distribution strategy – Identifying and reaching the vulnerable group
- Targeting Food Aid.
- Mass and Supplementary Feeding / Special foods/rations for nutritional relief
- Food and Nutrition security
- Nutrition in Special needs-High altitudes and Low temperatures.
- Space nutrition.

REFERENCE

1. Whitney and Sharon RadyRolfes. (1999). Understanding Nutrition" (8th edition) An International Thomson Publishing Company, Albnay, New York, USA, Wadsworth Publishing Company.
2. M.S. Bamiji, N. PrahladRao and VinodiniReddy . (1998). Text Book of Human Nutrition" Oxford and IBFI Publishing Co. Pvt. Ltd., New Delhi.
3. Heather Hedrick Fink, Alan E. mike sky. (2012). Practical Applications in Sports Nutrition, Third Edition, Library of Congress Cataloging in Publication Data. United States of America.
4. Michelle McGuire, Kathy A Beer man. (2011). Nutritional sciences From Fundamental to Food, Second Edition, WadsworthCengage Learning, Belmont, USA.
5. C.Gopalan, B.V.RamasastriandS.C.BalaSubramanian. (2012). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council Medical Research Hyderbad.
6. Nutrient Requirements andRecommended Dietary Allowance forIndians A Report of The Expert Group of ICMR.2010.
7. Dr.M. Swami Nathan. (2010). Food and Nutrition Volume-2 Second Edition the Bangalore Printing and Publishing Co Ltd Bangalore 560018.

Course Out comes - After the completion of the course students will be able to:

CO1 Acquire knowledge on advanced nutrition concepts and management

CO2 Demonstrate and apply the concepts and designing foods for brain, immunity and sports.

CO3 Skills to manage the diet in emergency situations.

CO4 Present knowledge on designing foods for special needs.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS
CO1	3	3					2			2		2	3	
CO2	3	3		3			2			2		2	3	
CO3	3	3	3	3		2						2		3
CO4	3	3	3	3		3						2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc(Home Science) Degree Examination
Third Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-IIFSND - 302: ADVANCES IN HUMAN NUTRITION

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following

Each question carries 5 marks Marks: 4x5=20

1. Write the composition and functions of the brain.
2. Describe the role of folic acid in brain growth and development.
3. What is the effect of malnutrition on immunity?
4. Write about role of NK cells in immunity.
5. What are the iodine deficiency disorders?
6. Define osteoporosis and write the etiological factors.
7. Write the consequences of high fluorine content in water.
8. What are the dietary requirements for astronauts?

SECTION- B

Answer ALL questions

Each Question carries 15 Mark Marks: 4x15 =60

9. (a). Explain the role of neurotransmitters in brain function.

(or)

(b).Describe the role of essential nutrients on brain growth and development.

10. (a). Discuss in detail about the acquired immunity.

(or)

(b).Illustrate the importance of the nutrients in bringing immunity.

11. (a). What are the symptoms of fluorosis and describe the measures of nutritional

Management?

(or)

(b). Write the dietary principles and management in Osteoporosis.

12. (a). Write about the nutrition management systems during Disasters.

(or)

(b). What are the nutrient requirements and dietary modifications at low temperature conditions ?

FSND 303 -A: NUTRITION ASSESSMENT TECHNIQUES

Course Objectives - To enable the students to:

1. Understand the methods of nutritional status assessment.
2. Apply knowledge on assessment techniques of protein quality in diets
3. Plan nutrition research using animal models.
4. Design nutrition research using Human models.

GENERIC ELECTIVE- THEORY

UNIT-I: Assessments of Nutritional Status

i. **Direct methods**: Anthropometric, Biochemical, Clinical, Dietary assessments.

- Anthropometric assessment: Introduction, Definition, Methods of measurements, Standardizations Classification of Nutritional status.
- Biochemical assessment: Need for Biochemical test, Interpretation of biochemical test, Types of test.
- Clinical assessments: Assessment of clinical signs in various disorders.
- Dietary Assessments: Types of Diet surveys, methods of Diet surveys, analysis and interpretation, problems in Diet surveys and solutions.

ii. **Indirect method**: Vital statistics and other Records

UNIT-II: Methods of Estimation of Protein Quality

- Protein efficiency ratio (PER), Digestibility co efficient, Biological value (BV), Net Protein Utilization (NPU), Net protein Ratio (NPR), Chemical score, protein Digestibility corrected Amino Acid Score (PDCAAS), Net Dietary Protein Calories Percent (NDPCP).

UNIT-III: Growth studies: Animal Models

- Role of animal models in nutrition research; need for extrapolation of animal research results to human populations; Maintenance of animal laboratory;

maintenance of records; Principles of formulation of diets- classification and composition.

- Growth and development of rats- role of different protein levels of the diet protein sources of the diet- body weight changes- feeding techniques- calculation of PER.
- Biological Assays with animal models: metabolic and balance studies: (for protein quality): Biological value- formulation of objectives, composition of diets- collections of urine and fecal, food intake assessment, determination of food and urine and fecal nitrogen – calculations of endogenous nitrogen – digestibility co-efficient (DC) and Biological value (BV).

UNIT-IV: Growth and Metabolic Studies with Human Subjects

- Principles, objectives.
- Growth studies with infants on feeding different protein sources. (case study experiences and report of research studies)
- Growth studies with preschool children, school children and adolescents: Effect of supplementation
- Nitrogen balance studies, in growing children, adolescents and adults- Procedure for conducting metabolic and balance studies and interpretation of results.

REFERENCE

1. Mahatab.S. Bamiji, N. PrahladRao and VinodiniReddy . (2001). Text Book of Human Nutrition" Oxford and IBFI Publishing Co. Pvt. Ltd., New Delhi.
2. Swaminathan M. (1995).Advanced Text book on "Food and Nutrition" (Applied aspects) Vol. II BAPPCO, The Bangalore Printing and Publishing Co. Ltd., (Chapters 21, 24) Bangalore.
3. Tara Gopaldas and SubhadraSeshadri.(1997). Nutrition, Monitoring and assessment, Oxford University Press, New Delhi .
4. Whitney. E.N, and S.R.Rolfes. (1999). `Understanding Nutrition', (8th edition) Chap. 6 and Appendix `J'.Measures of Protein Quality - West/Wadsworth.
5. Ruth .L. Pyke and Myrtle .L. Brown. (1997). Nutrition an Integrated approach, Chapter 15, Wiley eastern Publications, New Yark.
6. Mayanard, L.A and J.K. Loosli. (1992). Animal Nutrition, 5th edition McGraw Hill book company, New York

Course Outcome - After the completion of the course students will be able to:

CO1 Assess nutritional status using ABCD techniques.
CO2 Apply advance research techniques in dietary assessment.
CO3 Do nutrition research using animal models.
CO4 Design nutrition research using human models.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3	2		2					3	3	
CO2	3			3	2		2					3	3	
CO3	3			3			2					3		3

CO4	3			3			2					3		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc(Home Science) Degree Examination
Third Semester
(Specialization 'A'; Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-III- FSND303-A: NUTRITION ASSESSMENT TECHNIQUES

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Write short note on in- vivo and in -vitro techniques.
2. Briefly discuss about immunological studies.
3. What is the role of animal models in nutrition research?
4. Classify the formulation diets and give the principles.
5. How the population survey is carried out to assess dietary intakes of nutrients?
6. What are the techniques of measuring body composition?
7. Mention about ethics in nutrition research.
8. What is the role of computer applications in nutrition research?

S ECTION- B

Answer ALL questions
Each Question carries 15 Mark Marks: 4x15 =60

9. (a) Describe in detail about the metabolic and bioavailability studies.

(or)

(b).Differentiate between longitudinal and cross sectional studies with examples.

10. (a).What are the measures to be taken to maintain the animal laboratory in good condition?

(or)

(b).How the effect of supplementation can be studied to assess the growth and development?

11. (a).Explain the methods of protein quality estimation.

(or)

(b). Describe in detail about the nutrient balance studies.

12. (a).What are the techniques of collecting biological fluids from Human Nutrition Research ?

(or)

(b).Explain the collection and analytical techniques of food samples.

FSND 303-B: PUBLIC HEALTH NUTRITION

Course Objectives - To enable the students to:

1. Gain insight into the public health problems and their implications.
2. Acquire skills in organizing and evaluating nutrition projects in the community.
3. Appreciate the national and international contribution towards nutrition improvement in India.
4. Apply different assessment techniques for nutritional screening.

GENERIC ELECTIVE-THEORY

Unit- I: Public Health Nutrition – An Overview

- Concept and importance of public health nutrition
- Public health issues and problems
- Health care system in India
- Role of public nutritionist in health care delivery

Unit-II: Strategies to combat Public Health Problems

- Improving food and nutrition security - Green White and Blue revolution
- Nutrition education - Principles of planning –, where, when, whom, Kitchen garden, food fortification, food enrichment, PDS, PHC

Unit-III: Nutrition Intervention programmes

- National Nutrition Policy Preschool feeding programme, ICDS, MDM, SNP, WNP, ANP, BNP, NNAPP, FNB, NIDDCP
- National Program for Prevention of Blindness due to Vitamin A Deficiency

Unit-IV: Strategies to combat malnutrition

- International organizations concerned with food and nutrition: FAO, WHO, UNICEF, CARE, AFPRO, CWS, CRS World Bank and others.
- National organizations concerned with Food and Nutrition: ICMR, ICAR,

CHEB, CSWB, SSWB

- Economics of Nutrition: Malnutrition and its economic consequences; Economics in Nutrition – Food security, food production and food pricing.

REFERENCES

1. Gulani, K.K. 2005. Community Health Nursing.1st Edition.Kumar Publishing House.New Delhi.Pp – 662 to 664.

2. Gupta M.C., Mahajan B.K. 2003. Textbook of Preventive and Social Medicine.ThirdEdition.Jaypee Brothers Medical Publishers. New Delhi. India. Pp- 355-357.

3. Kishore J. 2007. National Health Programmes of India.7th Edition Century Publication.NewDelhi.Pp- 340-361.

4. .Oxford textbook of Public Health Ed. Roger Detels, James Mcewen, Robert Beaglehole,andHeizo Tanaka Oxford University Press (OUP) 4th Edition: 2002.

5. Public Health at the Crossroads – Achievements and Prospects. Robert BeagleholeandRuth Bonita 2nd Edition Cambridge University Press

6. Maxcy-Rosenau-Last Public Health & Preventive Medicine, Fourteenth Edition Ed RobertWallace, MD, et al.

7. Epidemiology and Management for Health Care: Sathe , P.V. Sathe, A.P., PopularPrakashan, Mumbai, 1991

8. International Public Health: Diseases, Programs, Systems, and Policies by MichaelMerson, Robert E Black, Anne J Mills - Jones and Bartlett Publishers

9. Preventive and Social Medicine, K Park, BansaridasBhanot Publishing House.

Course Outcome - After studying the course, students will able to:

CO1 Demonstrate systematic knowledge and understanding of the commonly occurring nutritional problems.
CO2 Gain awareness on the basic nutrition intervention programmes by national and international organizations.
CO3 Describe the various strategies to combat malnutrition.

CO4 Apply different assessment techniques for nutritional screening.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3	2		2					3	3	
CO2	3			3	2		2					3	3	
CO3	3			3			2					3		3
CO4	3			3			2					3		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc (Home Science) Degree Examination
Third Semester
(Specialization 'A'; Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-III- FSND 303-B: PUBLIC HEALTH NUTRITION

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Public health problems.
2. Green revolution
3. PDS.
4. Vitamin A deficiency.
5. BNP.
6. Food fortification.
7. Food security.
8. Food Pricing.

SECTION- B

Answer ALL questions
Each Question carries 15 Mark Marks 4x15 =60

9.(a). Write about concept and importance of public health Nutrition.

(or)

(b). Discuss the role of public health nutritionist in health care delivery.

10.(a). Discuss in detail how green and blue revolutions helped in improving food and nutrition security in India.

(or)

(b).What is nutrition education? Discuss in detail the principles and factors affecting nutrition education?

11.(a). What are national nutrition intervention programs in India? Write about the most success program in India in terms of planning, implementation and evaluation.

(or)

(b). Discuss in detail about ICDS and NIDDCP.

12.(a). Discuss in detail about the role of international organizations in combating malnutrition globally.

(or)

(b). Discuss the status of malnutrition in India and role of ICMR in combating malnutrition.

304 Practical

301 Food Processing and Preservation Technology

Course Objectives: To enable the students to:

1. Equip practical skills in different processing and preservation techniques of foods
2. Understand the planning and preparation of foods in special needs.

PRACTICALS:

1. Market survey of processed and preserved foods and to study the methods of processing, preservation, Additives and preservatives used, shelf life, cost and form of availability.
2. Preservation of food by traditional methods using sugar, salt and turmeric powder etc.
3. Preservation by using Chemical preservatives.
4. Preparation of Jams, Jellies, fruit Juices, Squashes, Sauces and bottling – Shelf life study.
5. Pickling with a variety of foods - Shelf life study.
6. Drying and dehydration of foods.
7. Refrigeration, Freezing and freeze drying of foods.
8. Extrusion processing.
9. Processing and preservation of fermented products.
10. Visits to different commercial food processing units and Industries.

302 Advances in Human Nutrition

PRACTICALS:

1. Planning and preparation of Brain foods.
2. Demonstration of Electroencephalogram (EEG)
3. Identification of various immune cells by morphology – Leishman staining, Giemsa staining, Differential counts, Total counts.
4. Planning and preparation of antioxidant rich foods.
5. Iodine testing in salt and Flourine testing in water.
6. Demonstration of BMD and DEXA.
7. Planning and preparation of calcium rich diets for Osteoporosis.

8. Assessment of household food and nutrition security and calculation of Hunger Index.
9. Planning and preparation foods for Astronauts.
10. Planning and Preparation of foods for High altitudes and Low temperatures.

REFERENCES:

1. Rama swamy,H. and Marcote,M. (2005).Food processing- principals and applications, CRC Press, Newyork

2. Whitney and Sharon RadyRolfes. (1999). Understanding Nutrition" (8th edition) An International Thomson Publishing Company, Albnay, New York, USA, Wadsworth Publishing Company

Course outcomes: After studying the course, students will able to:
CO1: Apply of appropriate technologies to process and preserve different foods to extend the shelf life.
CO2: Demonstrate and present the skills in designing foods for special needs.

FSND 305: INSTITUTIONAL FOOD SERVICE MANAGEMENT (SKILL ORIENTED COURSE)

Course Objectives - To enable the students to:

1. Understand the different types and management of food services and exposure to the dietary department in a hospital setting.
2. Acquire knowledge on finance, personnel management, duties and responsibilities of dietitians.
3. Gain skills to act in a variety of capacities in clinical, administrative, and community settings.
4. Apply skills on quantitative food production and planning diet plans for different diseases by placing in hospitals.

SKILL ORIENTED COURSE- THEORY

UNIT-I: Introduction to food service Industry, management and types of Food service establishments.

- Principles, functions and types of food service management.
- Need and importance
- Tools of Management.
- Management of resources.
- Laboratory support services in food safety.

UNIT-II: Financial and Personnel Management

- Definition and scope of financial management.
- Cost concept, cost control and pricing.
- Book keeping and accounting.
- Personnel Management - Recruitment, selection and Induction, Job analysis, description Monitoring work employee facilities and benefits, Inservice Training. Skills required to operate and manage food service system.

PRACTICALS:

1.Visit to a Fast-food Center.
2.Visit to a Railway Canteen.
3. Visit to a Hostel.
4. Visit to a Hospital Canteen.
5. Visit to a Star Hotel.
6. Quality Control in various stages of Food Service.
7. Layout design of Food Service establishment and principles of Food Service.

INTERNSHIP:

1. A full time 45 days internship in a multi-specialty hospital under a registered dietitian during the semester wherein the student should undergo training in dietary department and should understand the duties of dietitian and working of dietary department.

2. The student should report 3 case studies on any diseases and should submit a report on internship and case study for evaluation.

3. Internship Report

A Report to be maintained and submitted for evaluation- the contents of the report should contain Hospital- History, Organization, Departments, Functions, types of feeds, supervision and preparation of feeds, Schedule & Services with emphasis to dietary department, Case Study–3disease with teaching aids, Internship Outcome.

Contents of the report

- Hospital-History, Dietary department.
- Nutritional status and Diagnostic tests
- Drawing-up of patients prescription
- Discharge diet plans and follow-up where possible
- Acceptability and compliance
- Preparation of teaching aids
- Monitoring patients progress for any 3 diseases

REFERENCES

1. Ronald Kinton and victor cesarani (1992),"The theory of catering", Butler and Tanner Ltd. France and London.
2. Mohinisethi and Surjeet Mohan (1993), "Catering management - An integrated approach", second edition, Wiley easteem limited, New Delhi.
3. Ramesh V. Bhat and R. NageswaraRao (1996), "Food safety", Bappco (Ltd). Mysore, Banglore.
4. Ramesh V. Bhat and R. NageswarRao (1992), "Food safety in public catering", NIN, ICMR, Hyderabad.
5. Gulani, K.K. 2005. Community Health Nursing. 1st Edition. Kumar Publishing House New Delhi. Pp – 662 to 664.
6. Gupta M.C., Mahajan B.K. 2003. Textbook of Preventive and Social Medicine. Third Edition. Jaypee Brothers Medical Publishers. New Delhi. India. Pp- 355-357.

Course Outcomes - After completion of this course, students will be able to:

CO1 Gain knowledge in management of food service establishments.

CO2 Knowledge on skills in finance and personnel management.
CO3 Acquire skills in planning diets for different diseases.
CO4 Apply skills as a competent Dietitian

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3							3	3	3	
CO2	3			3							3	2	3	
CO3						3			3		3	2		3
CO4						3			3		3	2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc (Home Science) Degree Examination
Third Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021 onwards)
Paper:V- FSND: 305 INSTITUTIONAL FOOD SERVICE MANAGEMENT
(Skill Oriented Course)

Time: $1^{1/2}$ hours Max Marks: 40

SECTION- A

Answer any TWO of the Following
Each question carries 5 marks Marks: 2x5=10

1. Discuss the need and importance of Food service establishments.
2. List different types of food service establishments.
3. Define financial management.
4. Describe the records to be maintained in motels.

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks 2x15 =30

5. (a). Briefly describe the principles and functions of food service Management.
(or)
(b). What are the resources to be Managed in the food science establishments?

6. (a). Discuss the importance of book keeping accounting in food service establishment
(or)

(b). Describe the various strategies to be adopted for the management of personnel in foodservice industries

FSND 306-A: FUNDAMENTALS OF FOOD, NUTRITION AND HEALTH

Course Objectives - To enable the students to:

1. Gain knowledge on foods, food groups, balanced diet for different age groups.
2. Understand the importance of macro and micronutrients in daily diet.
3. Comprehend knowledge on deficiency symptoms of different nutrients.
4. Apply skills to assess nutritional problems in community.

OPEN ELECTIVE- THEORY

UNIT-I: Food Composition

- Food groups – Classification – food composition and nutritive values of different foods, Functions of foods. Balanced Diet, RDA for all age groups.

UNIT-II: Macronutrients

- Carbohydrates: Definition, classification, food sources, Function in human body, Recommended Daily Allowance (RDA) and importance of fibre.
- Fats and Oils: Definition, classification, saturated and unsaturated fatty acids, cholesterol, Food sources, requirements, RDA and biological functions.
- Protein: Definition, classification, essential and non-essential amino acids, protein quality, supplementary value of protein, food sources, RDA and functions.

UNIT-III: Micronutrients

- Vitamins: Definition, classification
- Fat soluble Vitamins (A, D, E,K)- Functions, sources, RDA, Deficiency diseases and symptoms.
- Water soluble Vitamins (B complex and C): Functions, sources, RDA, Deficiency diseases and its symptoms.

- Macro minerals: Calcium, phosphorous, sodium, potassium, chloride- sources, biological functions, factors affecting availability, Deficiency diseases and symptoms.
- Micro minerals:Copper, zinc, Iron, Iodine and fluorine in human nutrition, biological functions, factors affecting availability, Deficiency diseases and symptoms.

Unit - IV: Major Nutritional Problems of the Community:

- Malnutrition - PCM, Obesity, micronutrient malnutrition, government programs to eradicate PCM, Vitamin-A, Iron and Iodine deficiencies, principles of planning diets for different conditions of malnutrition.

REFERENCES

1. Swaminathan, M. (1999). Essentials of Food and Nutrition, Vol. I and Vol. II Ganesh and co. Madras.
2. Mahtabs. Bamji and N.PralhadRao. (2004). "Text book of Human Nutrition, Second Edition, Oxford and IBH Publishing co. PVT LTD. New Delhi,
3. C.Gopalan, B.V.RamasastriandS.C.BalaSubramanian.(2012). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council Medical Research Hyderbad.
4. Nutrient Requirements and Recommended Dietary Allowance for Indians A Report of the Expert Group of Indian Council Medical Research.2010.

Course Out comes - After studying the course, students will able to:
CO1 Acquire knowledge on food groups and functions of food.
CO2 Gain knowledge on importance of macro and micronutrients in different age groups.
CO3 Identify signs and symptoms of different nutrient deficiencies.
CO4 Apply skills to assess nutritional problems in community.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc (Home Science) Degree Examination
Third Semester
Open Elective
(CBCS for the students admitted from 2021 onwards)
Paper-VI:FSND 306-A: FUNDAMENTALS OF FOOD , NUTRITION AND HEALTH

Time: 3 Hrs **Max: 80 Marks**

Part – A
Answer any four questions
Each question carry equal marks **(4X5=20 Marks)**

1.
2.
3.
4.
5.
6.
7.
8.

Part – B

Answer all questions
Each question carry equal marks **(4X15 = 60 Marks)**

9. a)

(Or)

b)

10. a)

(Or)

b)

11. a)

(Or)

b)

12. a)

(Or)

b)

FSND 306-B: DYNAMICS IN FOOD PREPARATION

Course Objectives - To enable the students to:

1. Learn the principles of safe food preparation and food pyramid.
2. Understand the role of foods in cookery.
3. Apply knowledge about effect of cooking on nutrients.
4. Estimate the effects of cooking on Nutrients.

OPEN ELECTIVE- THEORY

UNIT-I: Introduction

- Definitions in food science.
- Composition and functions of foods.
- Food pyramid.
- Principles of safe food preparation.

UNIT-II: Cooking Process

- Objectives of Cooking.
- Preliminary preparations.
- Cooking methods- Moist heat methods, Dry heat methods; Fat as medium of cooking, Microwave cooking.
- Effect of cooking on Nutrients.

UNIT-III: Cooking Equipments

- Types of cooking equipments- Grill, Boiler, Oven and Microwave. Mechanical processing equipments- Vegetable Peeler, Chopper, Mixer, Slicing machine and mincing equipment.
- Non cooking equipment: Refrigerator.

UNIT-IV: Role of foods in Cookery

- Role of cereals, pulses, fats/oils, milk and milk products, flesh foods, sugars, vegetables, fruits and spices in cookery.

REFERENCES

1. Srilakshmi,B.(2001).*Food Science*, 2nd edition New Age International (P) Ltd., Publishers, Bangalore, Chennai & Hyderabad.
2. Swaminathan, M.(1979).*Food science and Experimental foods*. Ganesh & Co., Madras.
3. Dr.M Swami Nathan. (2010). Food and Nutrition Volume-2 Second Edition the Bangalore Printing and Publishing Co Ltd Bangalore 560018.
4. ShubhanginiA.Joshi. (2010). Nutrition and Dietetics Third Edition Tata Mecgraw Hill Education Private Limited New Delhi.

Course Out comes – After completion of the course, students will able:

CO1 Acquire knowledge on Food Pyramid.
CO2 Identify Role of foods on Cookery.
CO3 Gain knowledge on methods of Cooking.
CO4 Estimate the effects of cooking on Nutrients.

SRI VENKATESWARA UNIVERSITY:: TIRUPATI
Model Question paper
M.Sc (Home Science) Degree Examination
Third Semester
Open Elective
(CBCS for the students admitted from 2021-22 onwards)
Paper-VI: FSND 306-B: DYNAMICS IN FOOD PREPARATION

Time: 3 Hrs **Max: 80 Marks**

Part – A
Answer any four questions
Each question carry equal marks (4X5=20 Marks)

1.
2.
3.
4.
5.
6.
7.
8.

Part – B

Answer all questions
Each question carry equal marks (4X15 = 60 Marks)

9. a)

(Or)

b)

10. a)

(Or)

b)

11. a)

(Or)

b)

12. a)

(Or)

b)

DEPARTMENT OF HOME SCIENCE
M.Sc FOOD SCIENCE NUTRITION AND DIETETICS
CHOICE BASED CREDIT SYSTEM (CBSC)
(With effect from academic year 2021-22 onwards)

SEMESTER- IV
FSND 401: FOOD SAFETY STANDARDS AND QUALITY CONTROL
(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives -To enable the students to:

1. Understand the current food safety standards rules and regulations.
2. Gain knowledge on desirable and undesirable constituents and contaminants in foods.
3. Critically explains on subjective and objective methods.
4. Develop skills for quality analysis and quality assurance of food quality

CORE THEORY

UNIT-I: **Food Quality, Assessment and evaluation.**

- Definition and Physico Chemical attributes.
- Subjective methods; Sensory/ Organoleptic evaluation-Difference, Preference and Scoring tests.
- Objective methods of evaluation.
- Chemical methods of evaluation.
- Microbial methods of evaluation.

UNIT-II: Food quality Standards

- Food Safety Standards Authority of India (FSSAI)- Rules and Regulations- Food products Standards and additive regulations, Prohibition and sales regulations, Packaging and Labelling regulations, Alchoholic beverages Regulations, Fortification food regulations, Food / Health supplements and Nutraceutical regulations and Organic food regulations.
- Food Licensing and Registration system
- International Food Safety Standards- ISO, CODEX, HACCP- Principles.

UNIT-III: Food Contaminants

- Food contaminants- Definition, Classification- Physical, Chemical, Biological Contaminants
- Unintentional /Undesirable constituents-Naturally occurring contaminants, Heavy metals, pesticide residues, products of microbial growth, Health hazarads.
- Intentional/ Desirable constituents-chelating agents, acids, bases, buffer systems and salts; stabilizers, thickners, polyhydrocalcinols, anticaking, firming, clarifying and bleaching agents; antioxidants, non- nutritional sweeteness, antimicrobial agents, Gases and propellants.

UNIT-IV: Food contaminants and Standards of Quality

- Contaminants and quality standards in Milk and Milk products
- Contaminants and quality standards Fruit and Vegetable products
- Contaminants and quality standards Meat, Poultry, Eggs and Fish
- Contaminants and quality standards Fats and Oils
- Contaminants and quality standards Spices and Condiments.
- Contaminants and quality standards Water and Beverages.
- Contaminants and quality standards Food grains and Flours
- Contaminants and quality standards of Sweeteners- Sugar, Jaggery, Honey.

REFERENCES

1. VanishaNambiar. (2004). A Text book on "Food Contamination and Safety " ANMOL Publications Pvt.Ltd. New Delhi .
2. S.N.Mahindru . (2004). Food Safety –Concept and Reality, APH Publishing corporation, Ansari road ,Darya ganj, New Delhi.
3. Rajesh Mehta and J.George . (2005). Food Safety Regulation concerns and Trade – The developing country perspective ,Mac millan India Ltd.
4. Amerine, M.A.,Pangborrn RM, and Roessler BB. (1965). Principles of Sensory evaluation of foods", Academic press New York.
5. The prevention of food adulteration Act, 1954 and Prevention of food adulteration Rules, 1955. (1998). Federation of Indian Industry, New Delhi.
6. Norman N. Potter, Joseph H. Hotchkiss (1996) "Food Science" 5th Edition.CBS Publishers and Distributors, New Delhi.
7. https://www.fssai.gov.in

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Gain knowledge in current rules and regulations of food safety standards and quality assurance.

CO2 Identify the contaminants and additives in foods.

CO3 Select the appropriate analytical technique when presented with a problem.

CO4 Demonstrate practical proficiency in a food quality analysis.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3						3				3	3	
CO2	3	3						3				3	3	
CO3	3	2		1	3	1		3				3		3
CO4	3	2		1	3	1		3				3		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-I FSND401: FOOD SAFETY STANDARDS AND QUALITY CONTROL
(Common to M.Sc., Food Science Nutrition and Dietetics & MS Food TechnologyCourse)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Differentiate between subjective Evaluation and objective Evaluation.
2. Write about triangle test.
3. Define organic foods as per FSSAI.
4. Write arethe powers of Food inspectors.
5. Write about lead toxicity.
6. What are stabilizers?
7. What are common adulterants in milk?
8. How adulterants can be detected in Honey?

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks 4x15 =60

9.(a). Write an account of methods of objective evaluation to assess the Food quality.

(or)

(b). Write the most common microbial tests of food evaluation.

10.(a).Describe about the rules and regulations Packaging and Labelling.

(or)

(b). Discuss about the International Food Standards CODEX and HACCP principles.

11.(a).Write a short notes on desirable constituents of anticaking agents and propellants.

(or)

(b). Classify the food contaminants based on the type in food with examples.

12.(a).Describe the methods of identifying the common contaminants in fats and oils.

(or)

(b).What are the major contaminants in meat, poultry, Eggs and fish? How can they be eliminated during Preservation and storage?

FSND- 402: FOOD PRODUCT DEVELOPMENT AND MARKETING
(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Illustrate the new product categories in food market and their characteristics.
2. Elucidate the process of new food product development in food industry.
3. Exemplify various specialty food products and their applications.
4. Acquire the skill to design and development of new food product and analyse the quality of the product.

CORE THEORY

UNIT- I: New Food Products

- New food product: Definition, Characteristics, Need for New food product development.
- Classification of new food products: Line extensions - Repositioning of existing products - New form of existing product - Reformulation - New packaging - Innovative products - Creative products and Value added products.

UNIT-II: New Food product development

In Food Industry

- Ideation/Idea generation, Consumer research, Product design and Formulation.
- Process development: Prototype development and scale up.
- Quality assessment of new developed products: Evaluation-Shelf Life Testing.
- Packaging and labeling.

In Food ingredient and service Industry

- Characteristics, Consumers and Costumers, market places.
- Development of products for food service and ingredient industries.
- Quality and Safety of the products.

UNIT-III: Food Product Commercialization and Marketing

- Costing and Pricing, Test Market, Advertising and promotions, Product launching, Product life cycle.
- Entrepreneurship, concept, Types, qualities and functions of an entrepreneur.
- Ethics and Intellectual property/ Patents in food product development.

UNIT-IV: Food Products with reference to

- Health foods, Medical foods, Therapeutic foods, Herbal foods, Fortified foods.
- Infant foods, Geriatric foods, Sports drink.
- Functional foods, Designer foods and Nutraceuticals.
- Probiotics, Prebiotic and Symbiotics.

REFERENCES

1. Debashri, Ray.(2002). *Nutritional Challenge and Total Quality Management*, 1st edition;Sarup and Sons, New Delhi.
2. Gordon W.Fuller (2011), New Food Product development, 3rd edition, CRC press, Newyork.

3. Graf, E. and Saguy, I.S. (1991).*Food Product Development: From Concept to the Market Place*, Van Nostrand Reinhold New York.
4. Howard R.Moskowitz,(2009), An integrated approach to new product development, CRC press, Newyork.
5. Man, C.M.D. and Jomes, A.A.(1994).*Shelf life Evaluation of Foods*, Blackie Academic and Professional, London.
6. Mike Stringer and Colin Dennis.(2002). *Chilled foods A comprehensive guide*, 2nd edition ,Woodhead publishing limited, Cambridge, England, 2000.
7. Oickle, J.G. (1990).*New Product Development and Value Added*, Food Development Division Agriculture, Canada.

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Apply a product development process to generate ideas, develop concept to test market.

CO2 Design food and nutritional label of food products.

CO3 Demonstrate the skills to conduct the organoleptic evaluation of food product.

CO4 Work collaboratively with a team in food product development.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		3		3	3	3		3	3	3	3	3	3
CO2	3		3		2		3	2	3		3	3	3	3
CO3	3		3		3	3				1	3	3	3	3
CO4	2		3			3	3		2		3	3	3	3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
(CBCS for the students admitted from 2021-22 onwards)
Paper:II- FSND402: FOOD PRODUCT DEVELOPMENT AND MARKETING
(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Define new food product give the characteristics of a new product.
2. What is the importance of developing new product at an industrial level?
3. How recipe development and scale up is carried out in a food industry.
4. Differentiate between packing and packaging and note down the principles.
5. What are the nutritional and health needs to be considered in product development?
6. Differentiate between prebiotics and probiotics.
7. Define ethics and mention the guidelines of ethics while developing a food product.
8. Define patents. What the procedures to be followed to receive food patents.

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks: 4x15 =60

9 .(a).Classify the various food products emerging into the food marketing.

(or)

(b).What are the factors affecting food product development?

10.(a).Explain in detail about the different phases of food product development.

(or)

(b).Define Idea generation and discuss the internal and external sources of ideas.

11.(a).Describe the characteristics and consumer aspects of food ingredient industry. Explain.

(or)

(b). Describe the characteristics and consumer aspects of food service industry. Explain.

12.(a). Discuss about the requirement of therapeutic and an value added foods.

(or)

(b). Enumerate the functional and Neutraceuticals foods in detail.

FSND 403-A: NUTRITION FOR HEALTH AND FITNESS

(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives- To enable the students to:

1. Define the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation.
2. Understand the Energy metabolism pathways during physical activity.
3. Describe the role of macronutrients in physical performance, weight management and obesity.
4. Explains the nutritional needs in different sports and the role of national agencies.

GENERIC ELECTIVE-THEORY

UNIT-I: Physical Fitness and its Evaluation

- Definitions- Nutrition, Health, Physical activity and Physical Fitness.
- Health benefits of Physical activity and Recommendations,
- Components of physical fitness to overall health-Cardiovascular Fitness, Muscular strength, Muscular Endurance, Flexibility, and Body composition.
- Assessment criteria of age specific fitness and health status- Evaluation of physical fitness- FITT Principles-Talk test, Target heart rate, Borg scale.

UNIT-II: Energy Metabolism in Physical Activity and Weight Management.

- Aerobic and Anaerobic metabolic pathways-ATP-Creatine Phosphate pathway(ATP-CP), Creatine Phosphate(CP), Lactic acid cycle, Glycolysis, Krebs cycle(TCA), Gluconeogenesis.
- Energy requirements and assessment of energy expenditure based on physical activity, Carbohydrate Loading.
- Special conditions- Weight management and Obesity-Dietary modifications-Restricted energy and fat diets, Low glycemic diets, Formula diets and meal replacement programs.

UNIT-III: Nutritional and Physical Performance

- Nutritional Requirements during Exercise- Carbohydrate, Fat, Protein-Recommendations- Before, During and After exercise.
- Carbohydrate utilization during exercise, Role of protein and fat in daily training and competitive performance.
- Vitamins and Minerals-Importance and Recommendations.
- Fluid–Recommendations, Importance and Consequences of Fluid balance. Hydration in pre, during and post exercise.

UNIT-IV: Sports Nutrition

- Classification of sports events and RDA for sports person.
- Nutritional requirements and special needs of sports person, pre, during, post sports events, water and electrolyte balance, ergogenic aids.
- Endurance and fatigue in sports performance.
- Assessment-Kinanthropometry: Definition; Introduction; Body size and proportion; Somatotyping; Circumferences; Skinfold measurement sites and

determining body composition; Applications. Role of National agencies towards improvements of sports performance.

REFERENCES

1. Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C.(Ed)(1999). Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
2. Whitney, E.N. and Rolfes, S.R.(1999). Understanding Nutrition, 8th Edition, West/Wadsworth, An International Thomson Publishing Co.
3. McArdle, W.Katch, F. and Katch, V. (1996). Exercise Physiology, Energy, Nutrition and Human Performance, 4th edition, Williams and Wilkins, Philadelphia.
4. Ira Wolinsky(ed) (1998). Nutrition in Exercise and Sports, 3rd Edition, CRC Press.
5. Mahtabs.Bamji and N.PralhadRao. (2004).Text book of Human Nutrition, Second Edition, Oxford and IBH Publishing co. PVT LTD. New Delhi.
6. Heather Hedrick Fink, Alan E. mike sky. (2012). Practical Applications in Sports Nutrition, Third Edition, Library of Congress Cataloging in Publication Data. United States of America.
7. Michelle McGuire, Kathy A Beer Man. (2011). Nutritional sciences From Fundamental to Food, Second Edition, Wadsworth Cengage Learning, Belmont, USA

Course Outcomes - After completion of this course, students will be able to:

CO1 Gain knowledge on concepts of physical activity and physical fitness.
CO2 Describe the energy metabolism pathways in physical activity.
CO3 List the role of macronutrients in physical performance.
CO4 Demonstrate the importance of nutrients in Sports.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										2	3	
CO2	3	2										1	3	
CO3	3		3									1		3
CO4	3			2	2							2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
(CBCS for the students admitted from 2021-22 onwards)
Paper: III: FSND 403-A - NUTRITION FOR HEALTH AND FITNESS
(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Define the cardiac and muscle endurance.
2. What is BORG Scale?
3. Write briefly glycolysis energy pathway.
4. What is BMI? How do you assess the BMI?
5. How do you calculate protein requirements for different levels of exercise?
6. Write the importance of vitamins in exercise.
7. Write pre fluid requirements for an athlete.
8. Write the importance of Ergogenic foods in sports performance.

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks 4x15 =60

9.(a).Explain about the interrelationship between physical fitness and health.

(or)

(b). How do you assess fitness using FITT principle?

10.(a). Explain in detail the fat metabolism before, during and after exercise.

(or)

(b). Explain how the anaerobic energy cycles contribute energy during heavy exercise.

11.(a). Write the role of macro nutrients in supporting physical activity.

(or)

(b).What are the adverse health effects of dehydration or hypo hydration?

12. (a).Describe the assessment of nutritional status of sports person.

(or)

(b).What is Kinanthropometry, explain different measurements?

FSND 403-B: GERIATRIC NUTRITION

(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objectives - To enable the students to:

1. Understand the physiological changes and theories of ageing.
2. Gain knowledge on importance and consequences of diet in elderly.
3. Create awareness on degenerative diseases, life style genesis and its management through diet.
4. Able to explain government programs and policies for elderly.

GENERIC ELECTIVE- THEORY

UNIT-I: Changes in Ageing

- The process of Ageing – Physiological biochemical and body compositional changes – Theories of ageing. Socio-cultural and psychological aspects of ageing – Health seeking behaviour of the elderly.

UNIT-II: Nutritional requirements

- Food and Nutritional needs of the elderly – Dietary management – Special problem of women – menopausal, post-menopausal. Problems; Early nutrition and nutrition and health in later years.

UNIT-III: Diseases of Ageing

- Chronic degenerative diseases and nutrition and health problems of the elderly – their etiology – genesis life style and living condition, management, prevention and control.

UNIT-IV: Programmes

- Policies and programmes of the government and NGO sectors pertaining to the elderly – old age homes – Day care and recreation centers – their need and scope.

REFERENCE

1. Sharma, O.P. (Ed.) (1999): Geriatric Care in India – Geriatrics and Gerontology: A Textbook, M/S. ANB Publishers.
2. Mahtabs.Bamji and N.PralhadRao. (2004). Text book of Human Nutrition, Second Edition, Oxford and IBH Publishing co. PVT LTD. New Delhi.
3. Heather Hedrick Fink, Alan E. mike sky. (2012). Practical Applications in Sports Nutrition, Third Edition, Library of Congress Cataloging in Publication Data. United States of America.
4. Michelle McGuire, Kathy A Beer man. (2011). Nutritional sciences From Fundamental to Food, Second Edition, WadsworthCengage Learning, Belmont, USA.

5. Swami Nathan M. (2010). Food and Nutrition Volume-2 Second Edition the Bangalore Printing and Publishing Co Ltd Bangalore 560018.
6. ShubhanginiA.Joshi. (2010). Nutrition and Dietetics Third Edition Tata Mecgraw Hill Education Private Limited New Delhi.

Course Out comes - After completion of this course, students will be able to:
CO1 Acquire knowledge on process of ageing.
CO2 Describe diet plans for different disease conditions in elder people.
CO3 Illustrate the available government benefits for elder people.
CO4 Plan diet according to recommendations for elder people.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3											3	
CO2	3	3							2	2			3	
CO3	3	3	2			2			2	2				3
CO4						3						2		3

3-High, 2- Medium, 1- Low

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
(Specialization 'A': Food Science Nutrition and Dietetics)
(CBCS for the students admitted from 2021-22 onwards)
Paper-III: FSND 403-B :GERIATRIC NUTRITION
(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Time : 3 hours Max Marks:80

SECTION- A

Answer any FOUR of the Following
Each question carries 5 marks Marks: 4x5=20

1. Theories of ageing
2. Body composition changes of elderly
3. Post-menopausal problems
4. RDA for elderly
5. Health problems of elderly
6. Degenerative diseases of elderly
7. Old age homes
8. Recreation centers for elderly

SECTION- B

Answer ALL questions
Each Question carries 15 Marks Marks 4x15 =60

9. (a). Discuss in detail about the physiological and biochemical changes of elderly.

(or)

(b). Discuss in detail about socio-cultural and psychological aspects of ageing.

10. (a). Write about the food and nutritional needs of the elderly.

(or)

(b). Discuss in detail about the post-menopausal problems of women.

11. (a). Discuss in detail about the neurological problems of elderly.

(or)

(b). Discuss in detail about the health problems of the elderly.

12. (a). Write in detail about the policies and programmes of the government for elderly.

(or)

(b). Discuss about the status of old age homes, day care centers and recreation centers for elderly.

404 Practical Food Safety and Quality Control and Food Product development

401 Food Safety Standards and Quality Control

Course Objectives - To enable the students to:

1. Understand the techniques of qualitative and Quantitative analysis of quality of different foods.
2. Develop skills in identifying the techniques of identifying adulterants in foods.

PRACTICALS:

Assessment of quality parameters and adulterants in different foods

1. Survey of label information of foods in market
2. Cereals, Pulses and Flours – Label information, detection of adulterants
3. Fats and oils – Label information, Adulterant tests, Iodine number and FFA Value
4. Fruit and vegetable products – Label information, Acidity , TSS, Sugars
5. Coffee and Tea, Honey – Label information, Detection of Adulterants
6. Milk and milk products- Label information, COB test, Acidity, MBRT, Detection of adulterants.
7. Spices and Condiments- Label information, Detection of adulterants.
8. Determination of different Preservatives
9. Determination of different Colors
10. Document preparation for the approval of FSSAI.

Course Out comes - After completion of this course, students will be able to:

CO1: Acquire techniques in assessing the quality of foods

CO2: Understand the methods of identifying the adulterants in foods

402 Food Product Development and Marketing

Course Objectives - To enable the students to:

1. Acquire practical skill in developing and analyzing a food product.
2. Develop skill in different stages of product development

PRACTICALS:

New Food Product Development and Marketing

1. Ideation.
2. Concept Development.
3. Market research.

4. Formulation and Standardization.
5. Acceptability studies.
6. Shelf life Studies.
7. Costing and Pricing.
8. Food and Nutrition labeling and packaging.
9. Development of Product Promotion strategies.
10. Test Marketing.

REFERENCES:

1. Amerine, M.A.,Pangborrn RM, and Roessler BB. (1965). Principles of Sensory evaluation of foods", Academic press New York.
2. https://www.fssai.gov.in
3. Man, C.M.D. and Jomes, A.A.(1994).*Shelf life Evaluation of Foods*, Blackie Academic and Professional, London.

Course Out comes - After completion of this course, students will be able to:

CO1: Develop skills in Product development

CO2: Gain Knowledge in different stages of product development and evaluation

405: TECHNOLOGY OF PACKAGING

(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

Course Objective To enable the students to:

1. Provide knowledge on packaging and packaging materials
2. An overview of the scientific and technical aspects of food packaging.
3. Enable the students to understand the regulations of packaging and packaging material testing.
4. Apply skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life.

MULTI- DISCIPLINARY COURSE-THEORY

UNIT- I: Introduction and Types of Packaging

- Principles of food packaging, Functions of packaging; Type of packaging materials- Paper and Paperboard, types of paper, Glass, Metal and Plastic-Thermosets and Thermoplastics.
- Selection of packaging material for different foods. Methods of packaging and packaging equipment.
- Packaging-Food Interactions**:** Factors affecting flavor absorption, the role of the food matrix, the role of differing packaging materials, Flavor modification and sensory quality.

UNIT- II: Food Packaging System

- Active and Intelligent Packaging Techniques**:** Active packaging techniques, intelligent packaging techniques, Consumers towards and novel packaging.
- Aseptic Packaging Technology-advances, systems and its food applications, packaging for high pressure processing.
- Oxygen, ethylene and other scavengers**:** Oxygen scavenging technology, Selecting the right type of oxygen scavenger, Ethylene scavenging technology, Carbon dioxide and other scavengers.

PRACTICALS:

1. Classification of various packages based on material and rigidity.
2. Measurement of thickness of packaging materials.
3. Measurement of basic weight and grammage of paper and paperboards.
4. Measurement of water absorption of paper and paper boards (Cobb Test).
5. Measurement of grease resistance of papers.
6. Drop test, Box compression test.
7. Measurement of grease resistance of papers.
8. Head space analysis of packaged food.

REFERENCES

1. Robertson GL,(2012) *Food Packaging – Principles and Practice*, CRC Press Taylor and Francis Group

2. Ahvenainen. R. (2003).*Novel Food Packaging Techniques*:CRC Publications.

3. RaijaAhvenainen (2003) *Novel food packaging techniques*, Published by Woodhead Publishing Limited.

4. F. A. Paine and H. Y. Paine (1992) *A Handbook of Food Packaging*, 2nd edn Blackie Academic and Professional, London.

Course Outcomes- After the completion of the course, the students will able to:

CO1 Exposure about packaging, packaging materials and packaging methods.

CO2 Comprehend the overview of the scientific and technical aspects of food packaging

CO3 Acquire knowledge on regulations of packaging and testing.

CO4 Apply skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life.

CO-PO Mapping

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		1									3	3	3
CO2	3		1					2			1	3	3	3
CO3	3		1					3			3	3	3	3
CO4		3	3		3			2	2	2	3	3	3	3

H-High- 3, M- Medium- 2, L- Low- 1

SRI VENKATESWARA UNIVERSITY::TIRUPATI

Model Question paper

M.Sc (Home Science) Degree Examination

Fourth Semester

(Common to M.Sc Food Science Nutrition & Dietetics and MS Food Technology Course)

(CBCS for the students admitted from 2021-22 Onwards)

Paper-IV:405: TECHNOLOGY OF PACKAGING

Time : 1.30 hours Max Marks:40

SECTION- A

Answer any TWO of the Following

Each question carries 5 marks Marks: 2x5=10

1. Write about the Principles and Functions of Food Packaging
2. Enlist different Types of Packaging materials used for Food Packaging?
3. Explain in brief about
   A) Water Vapor Transmission Rate B) Gas Transmission Rate
4. What are the different factors affecting Flavor Absorption ?

S ECTION- B

Answer ALL questions

Each Question carries 15 Mark Marks: 2x15 =30

5.(a). Write in detail about Thermosets and Thermoplastics?

(OR)

(b). What are the different Methods used for Food Packaging?

6 (a)What is meant by Barcode? Explain in brief about Barcoding and their Types?

(OR)

(b). Explain in detail about the role of Food Matrix in Packaging- Food Interactions?

FSND406-A: CHILD GROWTH AND DEVELOPMENT

Course Objectives - To enable the students to:

1. Know the terms growth , development and stages of development across life span
2. Understand the characteristics of children at different stages of childhood
3. Explain the different developments like physical, cognitive , language and social development during childhood.
4. Apply knowledge to understand normal development and developmental delays during childhood.

OPEN ELECTIVE -THEORY

UNIT-I: Foundations of Development

- Understanding the terms Child, Growth, Development, Child Development, Human Development, and Developmental tasks.
- Principles of Child Development and Factors influencing growth and Development of Children.
- Determinants of Development - Role of Heredity and Environment in Development
- Stages of Development across life span and domains of development.

UNIT-II: Infancy

- Infancy – Characteristics
- Sensory- Motor activities
- Language Development
- Socio-emotional development.

Unit-III: Early Childhood

- Early Childhood Period –Characteristics
- Physical Development
- Cognitive development
- Emotional and Social development

UNIT-IV: Middle Childhood

- Middle/ Late Childhood Period-Characteristics
- Physical development

- Cognitive development.
- Emotional and Social development

REFERENCES

1. Berk, L. E. (2007). Child Development. Prentice-Hall of India Pvt.Ltd, New Delhi.
2. Feldman, R.S. (2011).Understanding Psychology, Tenth Edition. Tata MCGraw Hill Education Private Limited, McGraw- Hill, New Delhi.
3. Hallahan, D.P. and Kauffman, J.M. (1991). Introduction to exceptional children. 5th ed. Allyn and Bacon, Boston.
4. Hurlock – E.B. (1990) Child Development , Tata McGraw Hill Company Ltd, New York. McGraw- Hill, New Delhi.
5. Rozario, J. and Karanth, P. (2003). Learning disability in India. Sage publication, New Delhi.
6. Santrock, J. W. (2013). Child Development. Tata McGraw Hill Company Ltd, New Delhi.
7. Singh, A. (Ed).(2015). Foundations of Human Development: A life span approach. Tata McGrawHill ,New Delhi.
8. Prasad, J. and Prakash, R. (1996). Education of handicapped children, problems and solution. Kanishka publication distribution. New Delhi.

Course Outcomes - After completion of the course, students will able to:

CO1 Define the terms growth and development, and stages of development across life span

CO2 Understand the characteristics of of children at different stages of childhood.

CO3 Critically explain different developments like physical, cognitive, language and social development during childhood

CO4 Apply knowledge to understand normal development and developmental delays during childhood to assess all round development during childhood

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
Open Elective
(CBCS for the students admitted from 2021-22 onwards)
Paper-VI: 406-A: CHILD GROWTH AND DEVELOPMENT
(Open Elective)

Time: 3 Hrs **Max: 80 Marks**

Part – A
Answer any four questions
Each question carry equal marks (4X5=20 Marks)

1.
2.
3.
4.
5.
6.
7.
8.

Part – B
Answer all questions
Each question carry equal marks (4X15 = 60 Marks)

9. a)

(Or)

b)

10. a)

(Or)

b)

11. a)

(Or)

b)

12. a)

(Or)

b)

FSND 406-B: DISASTER MANAGEMENT

Course Objectives - To enable the students to:

1. Know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management.
2. To understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters;.
3. Explain the efforts made by the NGOs, Community based organizations and local administration in disaster management.
4. Discriminate disaster responses of Armed forces and Police.

OPEN ELECTIVE- THEORY

UNIT-I: Natural Disasters

- Meaning and nature of natural disasters, their types and effects.
- Floods, Drought, Cyclone, Earthquakes, Landslides, Avalanches, Volcanic eruptions, Heat and cold Waves.
- Climatic Change: Global warming, Sea Level rise, Ozone Depletion.

UNIT-II: Man Made Disasters

- Nuclear disasters, biological disasters, building fire, coal fire, forest fire. Oil fire, air pollution, water pollution.
- Deforestation, Industrial wastewater pollution, road accidents, rail accidents, air accidents, sea accidents.

UNIT-III: Chemical Hazards

- Release of Toxic chemicals.
- Sedimentation processes.
- Global Sedimentation Problems.
- Regional Sedimentation Problems, Sedimentation and Environmental Problems.

UNIT-IV: Disaster Management

- Efforts to mitigate Natural Disasters at National and Global levels.
- International Strategy for Disaster reduction.
- Concept of disaster management, National Disaster Management framework; financial arrangements
- Role of NGOs, Community-based organizations, and Media. Central, State, District and local Administration; Armed forces in Disaster response
- Disaster response: Police and other organizations.

REFERENCES

1. Gupta, H.K. (2003). *Disaster management*. Indian National Science Academy. Orient Blackswan.
2. Hodgkinson, P.E. & Stewart, M. (1991). *Coping with catastrophe: A handbook of disaster management*.
3. Routledge. and Sharma, V.K. (2001). *Disaster management*. National Centre for Disaster Management, India.

Course Outcomes - After the completion of the course, the students will be able to:

CO1 Gain in-depth knowledge about natural disasters; manmade disasters; chemical hazards: disaster management.

CO2 Design and administer a schedule for collection of Information regarding the roles of NGOs, Community based organizations , central state, District and local Administration, Police and armed forces, in Disaster management.

CO3 Illustrate the efforts made by the NGOs, Community based organizations and local administration in disaster management.

CO4 Discriminate disaster responses of Armed forces and Police.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
Model Question paper
M.Sc., (Home Science) Degree Examination
Fourth Semester
Open Elective
(CBCS for the students admitted from 2021-22 onwards)
Paper-VI: 406- -B: DISASTER MANAGEMENT

Time: 3 Hrs **Max: 80 Marks**

Part – A
Answer any four questions
Each question carry equal marks (4X5=20 Marks)

1.
2.
3.
4.
5.
6.
7.
8.

Part – B
Answer all questions
Each question carry equal mark (4X15 = 60 Marks)

9. a)

(Or)

b)

10. a)

(Or)

b)

11. a)

(Or)

b)

12. a)

(Or)

b)